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National Mapping Program

Map Data Catalog

Department of the Interior
U.S. Geological Survey
National Cartographic
Information Center (NCIC)

Second edition, 1984
For sale by the Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

READEX FICHE

Introduction

The National Cartographic Information Center (NCIC) is the information branch of the National Mapping Program, U.S. Geological Survey. NCIC's mission is to help users gain better, faster, low-cost access to the cartographic holdings of Federal, State, and private agencies.

This catalog tells how to order a wide range of mapping byproducts that may help to fill one or more of your special needs. For each such product, the catalog:

- Describes and illustrates the product offered.
- Explains the scope of geographic coverage available.
- Lists typical uses of the product.
- Explains how to order the products you need.

Only a few of the products listed in this catalog are stocked. Most of them must be custom-produced to meet your particular requirement. Prices for the variety of products, formats and sizes are contained in a separate and periodically updated list. The price list is available free upon request from any NCIC office.

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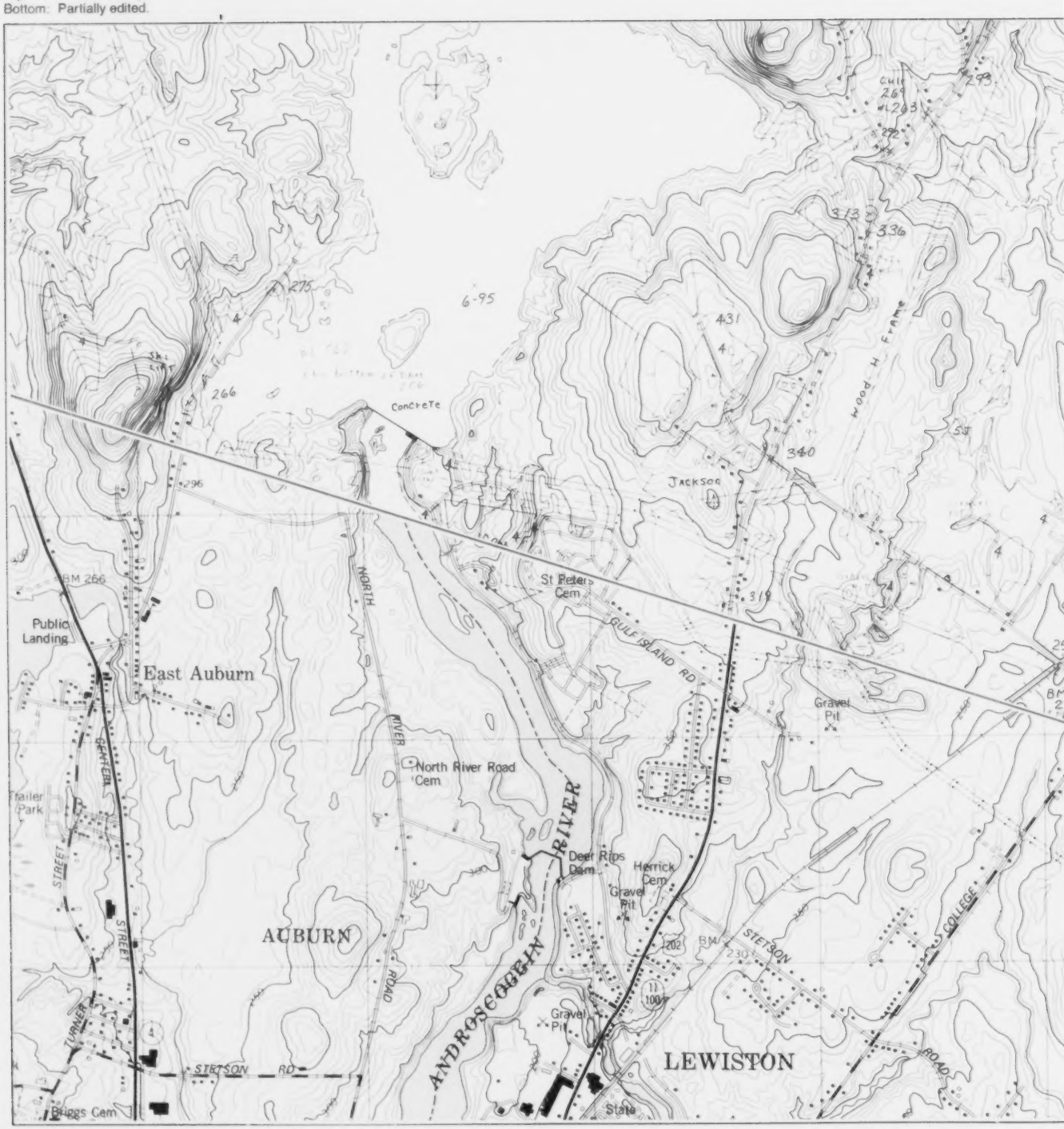
Advance prints

Top: Print of manuscript.
Bottom: Partially edited.



Advance prints are one-color prints of topographic mapping now in progress.

Examples of materials supplied, depending on stage of progress, are:

- Prints of mapping manuscripts compiled from aerial photos.

- Unedited advance prints (without names); field mapping and checking are complete.

- Partially edited advance prints (with names); final drafting is complete.

The advance prints currently offered for sale are listed in an *Advance Materials Index*. Each index covers one or more States.

Uses

Advance prints are an interim product. They can be used before a new map is published in final form.

How to order

1. From any Mapping Center NCIC office, request a free copy of the *Advance Materials Index* for each State you are interested in.

2. The indexes provide instructions for ordering advance prints. (Note: Please do *not* order *advance prints* from the Branch of Distribution.)

3. If a map you order has been published in final form, you will receive the published map instead of an advance print.

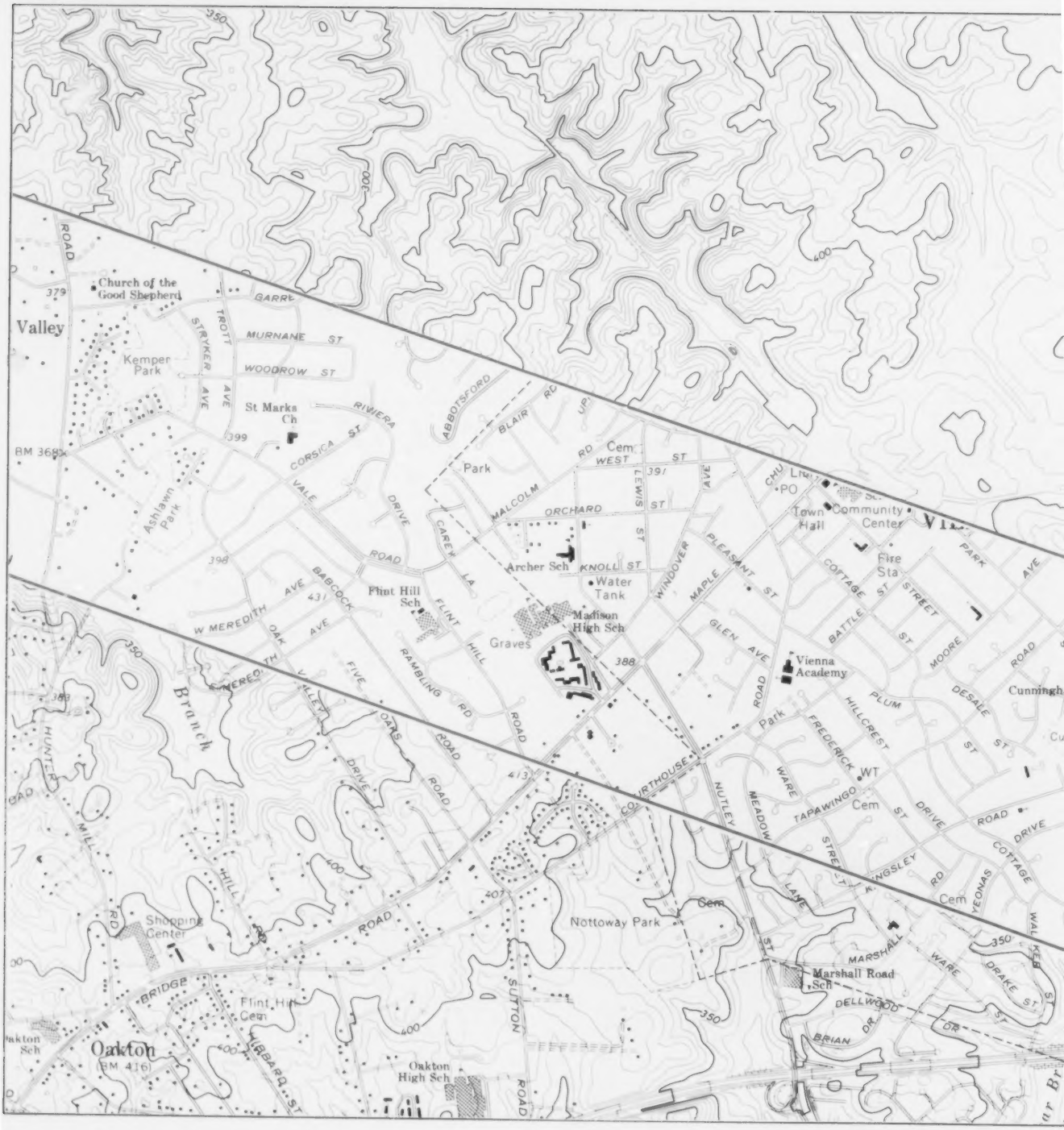
4. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices for advance prints are listed in the *Advance Materials Index*.

Color separates

Top: Separate of brown plate.
Middle: Separate of black plate.
Bottom: Composite.



You may order a separate film positive or negative of each color printed on a topographic map published by the Geological Survey.

Generally speaking, on most maps:

- Black shows cultural features and names.
- Blue shows water features.
- Red shows highway classifications, built-up areas, and U.S. land survey lines.
- Green shows areas of woodland, orchards, and vineyards.
- Brown shows topographic features.
- Purple shows unverified revised data on photorevised maps.

Two or more of the separates can be combined on a single piece of film.

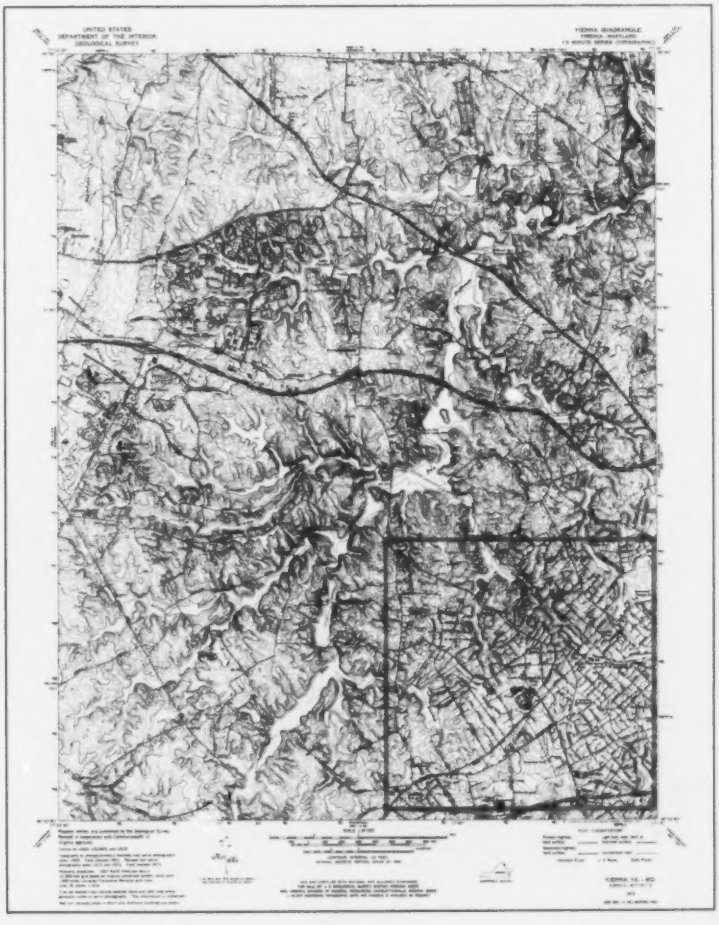
Each positive or negative can be prepared on an 0.004″ (0.01016 cm) or an 0.007″ (0.01778 cm) stable-base film with clear or matte finish.

The topographic maps currently published by the Geological Survey are shown on indexes. Each index covers one or more States.

Uses

The separates can be used to provide the base for custom-ordered, special-purpose maps. You can add or delete details to suit your needs.

For example, you can use the separates as the basis for producing regional and local planning maps, highway maps, and atlases.



How to order

1. From any Mapping Center NCIC office, request a free copy of the *Index of Topographic Maps* for each State you are interested in.

2. Use the index to identify maps from which you want to order a separate or composite.

3. Mail your request to any Mapping Center NCIC office. List the name, State, map series, and date of survey or last revision of each map from which you want one or more separates.

If you are unable to locate this information, describe the geographic area and approximate scale desired. We can research the map history of the area and tell you what maps are available.

Under the description of each map, list the separates and composites you want, and note whether you want:
(a) Negatives or positives.
(b) 0.004″ (0.01016 cm) or 0.007″ (0.01778 cm) stable-base film.
(c) Clear or matte finish.

4. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices are contained on a separate list available upon request from NCIC.

Single-color prices are for a black-and-white film negative or a black-and-white film positive.

The multi-color prices are for a composite film positive or negative in black-and-white or for a composite film positive in the colors requested.

Feature separates

Bathymetric contours.
Top to bottom:
1. Index.
2. Intermediate.
3. Supplementary.
4. Composite.

In addition to ordering map information by color separate, you may also order by feature. These feature separates are now available for some topographic maps published by the Geological Survey. For the most part, this group is limited to recent maps based on the metric system.

In the new feature-separation approach, the major features of a map are subdivided into classes. Separate drawings are prepared for each feature class to be printed in each color. A few features, such as primary and secondary highways, are printed in two colors (black and red). You can order reproducibles of any available drawing and/or a composite of two or more drawings.

You can order positives or negatives of feature separates on an 0.004″ (0.01016 cm) or an 0.007″ (0.01778 cm) stable-base film with clear or matte finish.

The topographic maps currently published by the Geological Survey are shown on *Indexes of Topographic Maps*. Each index covers one or more States.

Uses

Feature separates can be used to produce many kinds of special-purpose maps.

How to order

1. From any Mapping Center NCIC office, request a free copy of the *Index to Topographic Maps* for each State you are interested in.

2. Use the index to identify maps from which you want to order a feature separate or composite.

3. Send an inquiry to any Mapping Center NCIC office. List the name, State, map series, and date of survey or last revision of each map from which you want one or more feature separates. Under the description of each map, list the feature separates and composites you want, and note whether you want:
(a) Negatives or positives.
(b) 0.004″ (0.01016 cm) or 0.007″ (0.01778 cm) stable-base film.
(c) Clear or matte finish.

4. The Mapping Center NCIC office will research the map history of the areas defined in your inquiry and will tell you what feature separates are available and the price of each separate and composite.

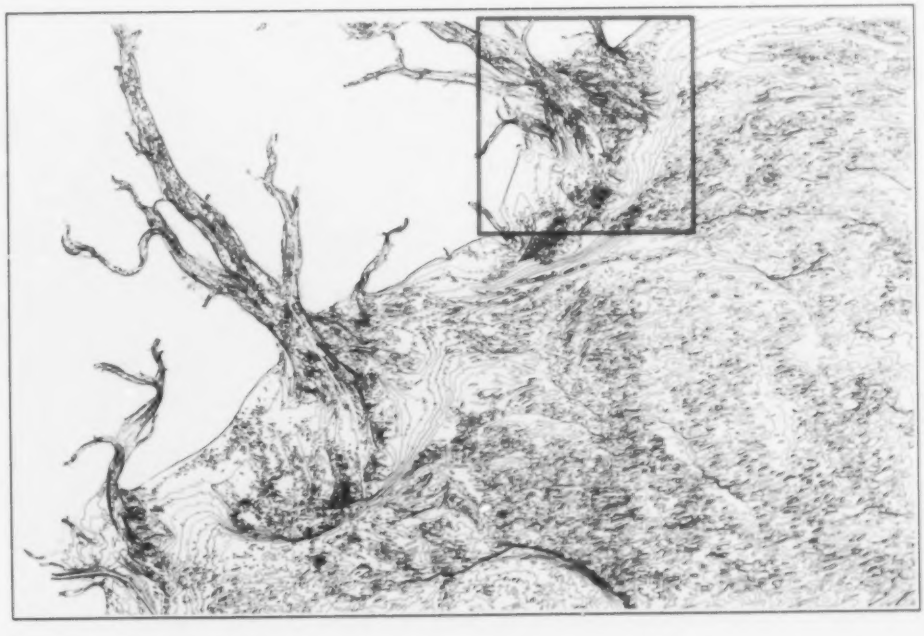
5. Based on the information provided, place your order with any Mapping Center NCIC office. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices are contained on a separate list available upon request from NCIC.

Single-color prices are for a black-and-white film negative or a black-and-white film positive.

The multi-color prices are for a composite film positive or negative in black-and-white or for a composite film positive in the colors requested.



Out-of-print maps

Portion of Vienna, Virginia
(Out-of-print maps)
Top: 1951.
Middle: 1957.
Bottom: 1961.

A map is out of print when the sales stock of the map has been depleted and the Geological Survey has decided not to reprint it. Usually, the map has been replaced by a newer map of the same or a different series.

Topographic maps provide a detailed inventory of physical and cultural features of part of the Earth's surface for a specific date.

There is no index for the Geological Survey's out-of-print maps, but its current maps are shown on an *Index to Topographic Maps* for each State. The index for the State you are interested in is useful for pinpointing the area for which you want out-of-print maps.

Uses

Successive editions of out-of-print maps provide a treasury of information that can be used to trace changes that have occurred in a given area.

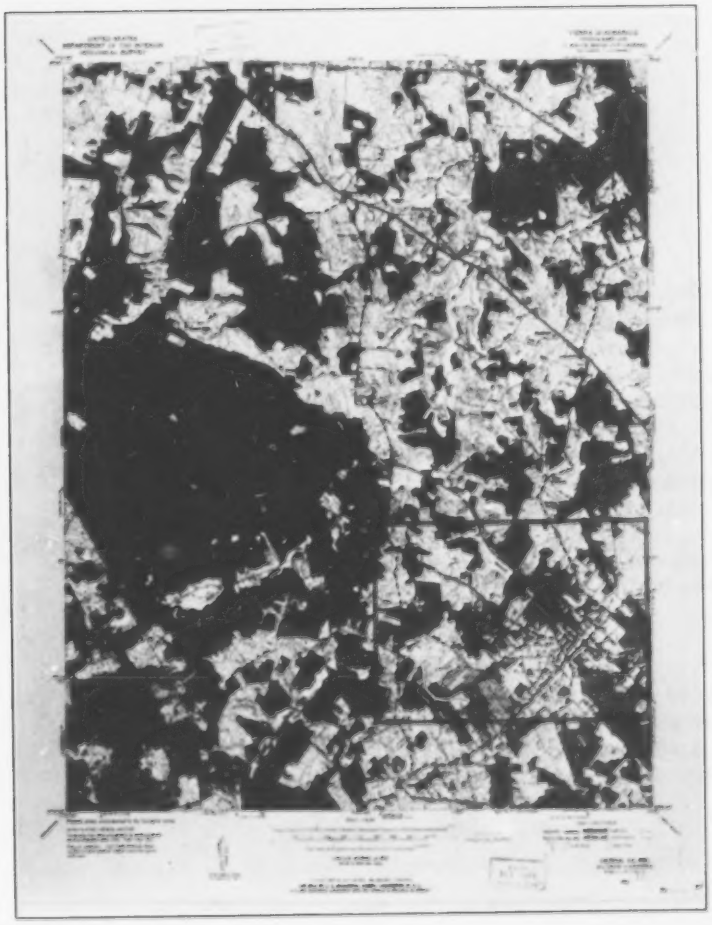
How to order

1. Send an inquiry to NCIC headquarters, Reston. If known, identify the State names, map names, scales, series, and dates of survey of current or out-of-print maps that cover the areas you are interested in.

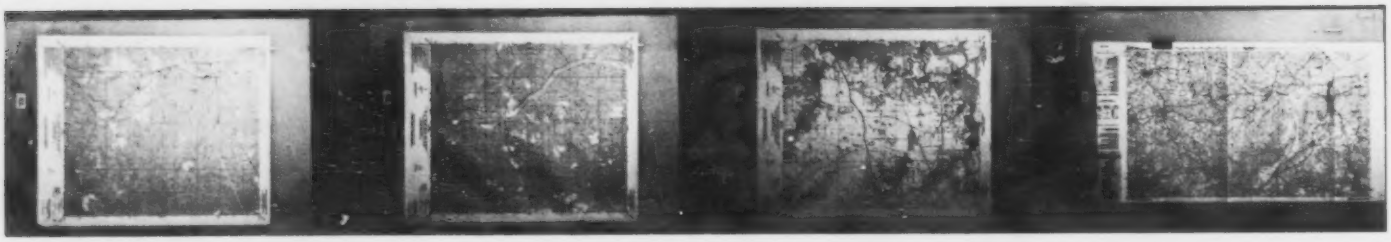
2. Based on the reply to your inquiry, order the out-of-print maps you want from NCIC headquarters, Reston. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices for black-and-white photo enlargements from microfilm are contained in a separate list available upon request from NCIC.



Maps on microfilm



Current and out-of-print Geological Survey maps are available on microfilm. The microimages are on rolls of 35-mm Anti-Halation Undercoat (AHU) film. Each roll contains as many as 500 maps at reduction ratios ranging from 20× to 36×.

The microfilm rolls are sold by State only. Quadrangles that bracket State boundaries are included in only one of the States. If complete State coverage is required, your order should include adjacent States. To determine the coverage you require, you can inspect the microfilm roll file at NCIC headquarters, Reston.

You can order positive rolls or negative rolls.

You can order silver-based or diazo film. Silver-based film is best for enlarging or copying, but it can be easily scratched or damaged. Diazo film is better suited for repetitive use, but its resolution is lower than that of silver-based film.

Uses

Rolls of microfilm enable users to maintain a complete file of current and out-of-print Geological Survey topographic maps in a small space and at very low cost.

How to order

1. Order microfilm rolls from NCIC headquarters, Reston.

2. In your order, specify:
(a) State or States for which you want coverage.
(b) Silver emulsion negative or positive film; diazo emulsion negative film.
(c) Before you order, NCIC suggests you inquire about the number of rolls of microfilm needed to cover the State(s) you want.

3. With your order, enclose a money order or check payable to the Geological Survey.

Price

Full and partial rolls of silver-based film are about twice as expensive as diazo film. Prices are contained on a separate list available upon request from NCIC.

T19. 2c

Land-use and land-cover and associated maps

The Geological Survey is now compiling land-use and land-cover and associated maps for the entire United States.

The maps are compiled using planimetric base maps of the Geological Survey at scales of 1:250,000 (1 inch on the map = about 4 miles on the ground) or 1:100,000 (1 centimeter on the map = 1 kilometer on the ground). As more 1:100,000-scale planimetric maps become available, more land-use and land-cover and associated maps will be prepared at that scale.

The land-use and land-cover maps depict 9 general land-use and land-cover categories subdivided into 37 subcategories. The categories are explained in *Geological Survey Professional Paper 964*. The categories can be used with data from conventional sources and from remote sensors on high-altitude aircraft and satellites.

Aerial photos and other remotely sensed data are the primary sources used in compiling the maps. Secondary sources include earlier land-use maps and other maps based on field surveys. The secondary source maps are usually available at larger scales and for small areas such as parts of metropolitan regions.

A minimum mapping unit of 10 acres (4 hectares) is used for all urban areas and bodies of surface water. The same unit is used for mapping mines, quarries, and gravel pits and for certain agricultural areas. A minimum mapping unit of 40 acres (16 hectares) is used for all other categories.

There are four kinds of associated maps:

- The map of *political units* depicts county and State boundaries as shown on Geological Survey base maps.

- The map of *hydrologic units* delineates hydrologic units established by the Water Resources Council and published by the Survey's Water Resources Division on 1:500,000-scale State maps.

- The map of *Census county subdivisions* shows minor civil divisions or equivalent areas. Census tracts are shown within Standard Metropolitan Statistical Areas (SMSA).

- The map of *Federal land ownership* delineates surface ownership to a minimum mapping unit of 40 acres (16 hectares) for lands administered by Federal agencies. Subsurface ownership rights are not shown.

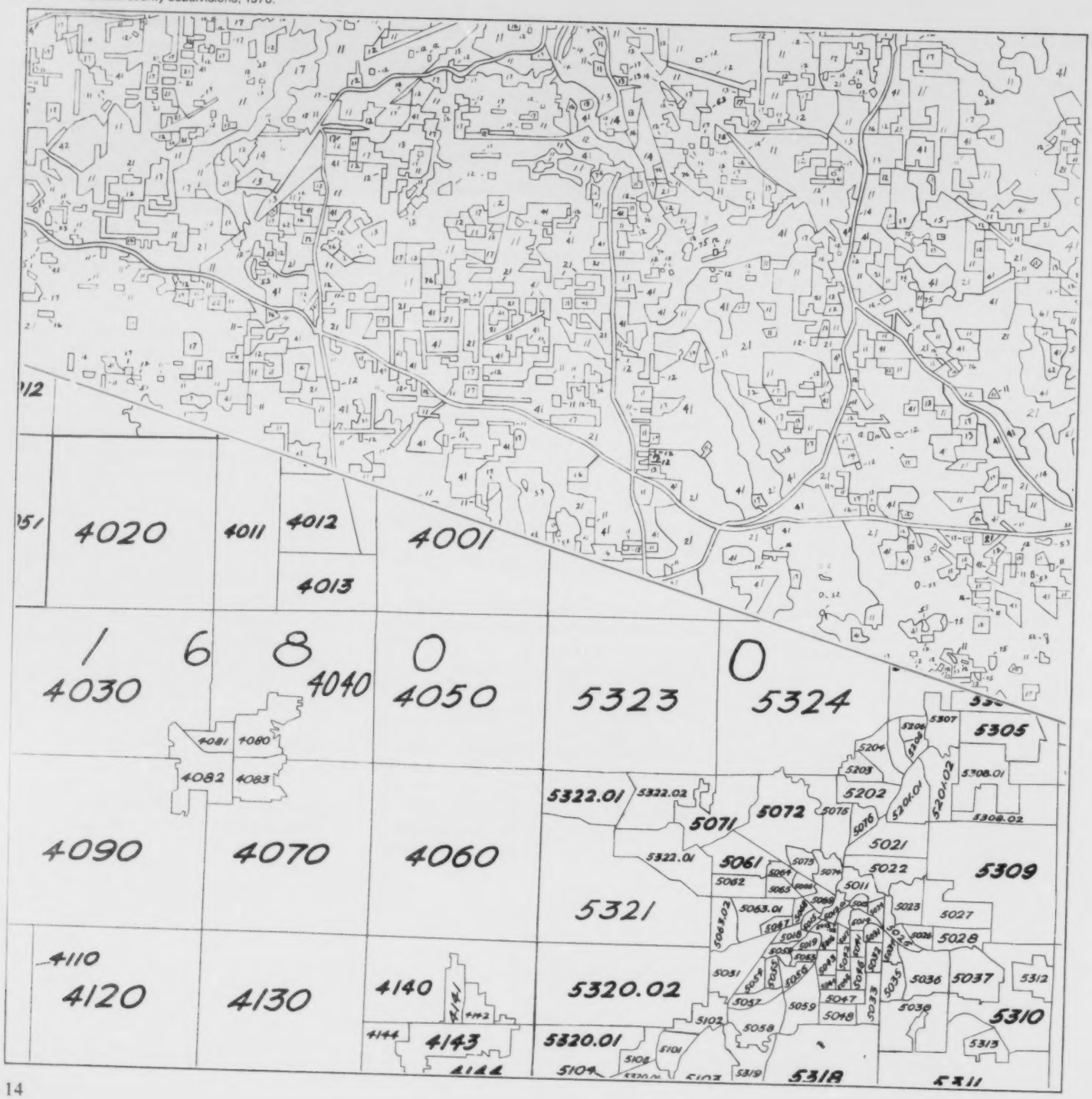
Sets of four associated maps are being prepared at the same scale as the land-use and land-cover maps. This enables the user to relate the land-use and land-cover maps to other data. For example, land-use data can be combined with the socioeconomic data compiled by the Bureau of the Census or can be compared with hydrologic data compiled for hydrologic units.

The maps currently available are listed in an *Index of Land-Use and Land-Cover and Associated Maps*. Master sets of the maps for each region are on open file and are available for reproduction at the Mapping Center NCIC office responsible for the region (see map and addresses on inside front cover of this catalog).

To permit a wide range of graphic interpretation and use, copies of the maps are available on three types of material:
(1) Stable-base film positive, clear or matte.
(2) Semi-stable diazo foil, matte.
(3) Paper diazo.

Land-use and land-cover and associated maps

Top: Land-use and land-cover, 1972.
Bottom: Census county subdivisions, 1970.



Uses

The land-use and land-cover and associated maps will help to satisfy a longstanding need voiced by land-use planners, land managers, and resource-management planners. In answer to the needs of these and other users, they will provide a consistent level of detail and a standardization of categories mapped at scales well suited for planners and managers.

When the bench-mark series of maps is completed, updating of the maps will provide a much-needed tool for analyzing trends, changes in land-use patterns, and problems in local and regional areas throughout the United States.

How to order

1. From any Mapping Center NCIC office, request a free copy of the *Index of Land-Use and Land-Cover and Associated Maps.*

2. To order a copy of *Professional Paper 964,* write to: Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202 and with your order send a money order or check for 75¢ for each copy desired.

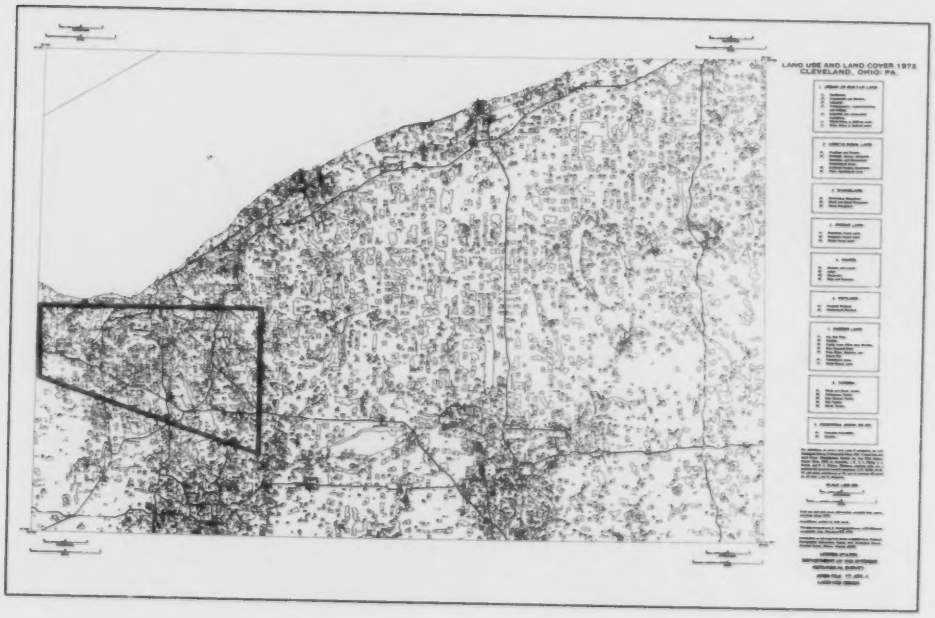
3. If enlargements, composites, or other special processing is desired, request assistance from the nearest Mapping Center NCIC office.

4. Based on the information you have received, place your order with any Mapping Center NCIC office. List the maps you want:
(a) Land-Use and Land-Cover Maps.
(b) Associated Maps (Political units; Hydrologic units; Census county subdivisions; Federal land ownership).
For each map, specify whether you want:
(a) Stable-base film positive, clear or matte;
(b) Semi-stable diazo foil, matte; or
(c) Paper diazo.
Specify requirements, if any, for enlargements, composites, or other special processing.

5. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices are for stable-base film positive, semi-stable diazo foil, and paper diazo. Prices are contained in a separate list available upon request from NCIC.



Slope maps

This typical slope map shows a portion of Pittsburgh, Pennsylvania.

Slope maps delineate areas that have certain critical ranges of slope. The slope (or gradient) is usually expressed as a percentage, based on the ratio of vertical to horizontal distance on the land surface. Different slope zones are usually shown by different colors.

Very few slope maps have been published, and only a small percentage of the original compilation materials have been retained. Because most slope maps have been prepared to meet a specified request, no standard set of zone categories has been developed.

Uses

Slope maps can be used to:

- Evaluate the hydrology of watersheds.
- Identify forested areas where logging should be restricted because of soil and erosion factors.
- Predict the behavior of forest fires.
- Locate transportation corridors.
- Define zoning boundaries for restricting construction.

How to order

1. Write or phone any Mapping Center NCIC office for information.

2. Based on the information received, place your order with the Mapping Center NCIC office designated.

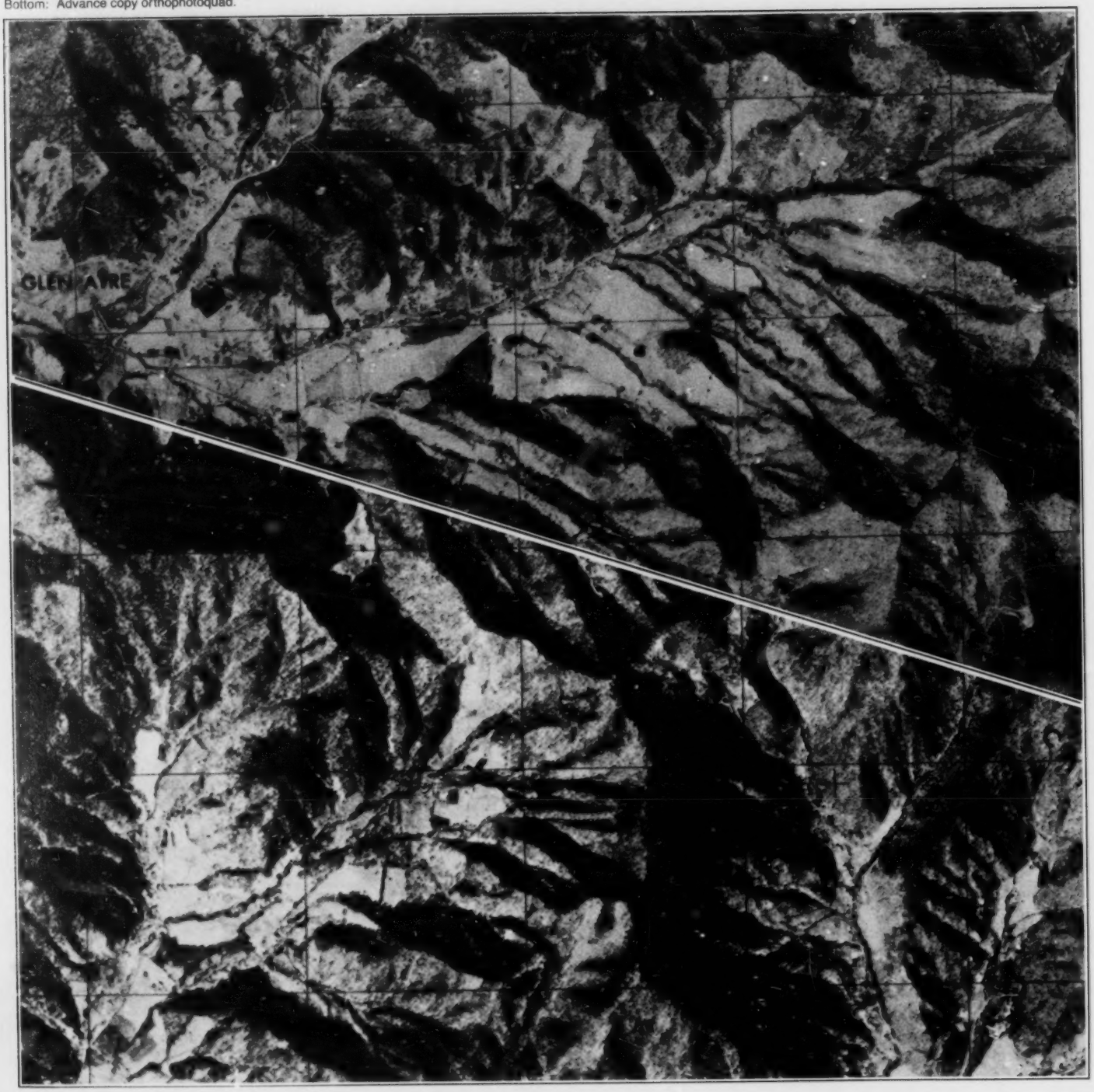
3. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices vary according to the format of the slope map.

Orthophotoquads

Top: Published orthophotoquad.
Bottom: Advance copy orthophotoquad.



Orthophotoquads are black-and-white photoimage maps in a standard quadrangle format. They are prepared from aerial photos that have been rectified to eliminate image displacements and scaled to standard map scales.

Orthophotoquads show many physical and cultural details that cannot easily be shown by map symbols. But cartographic treatment is limited, and contours are not shown.

Orthophotoquad coverage is now available for most unmapped areas of the United States. More than 90% of all orthophotoquads is available only in advance copy form.

The few published orthophotoquads and the advance copy orthophotoquads that are currently available are listed in an *Advance Materials Index*; each index covers one or more States.

Uses

Orthophotoquads can be used as map substitutes for unmapped areas and for areas in need of revision. They are also valuable map complements and can be used as a base for special-purpose maps.

How to order

1. From the Mapping Center NCIC office in the region of inquiry (see map on inside front cover), request a free copy of the *Advance Materials Index* for the State you are interested in.

2. The index provides instructions for ordering published and advance copy orthophotoquads.

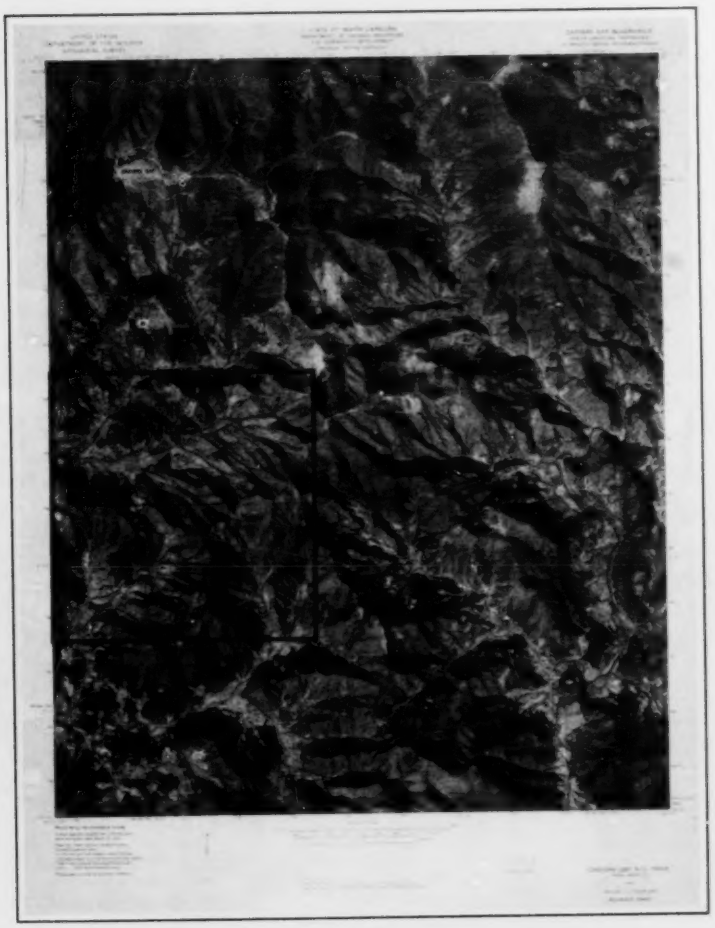
3. With your order, enclose a money order or check payable to the Geological Survey.

Price

Prices are contained in a separate list available upon request from NCIC.

Advance copy orthophotoquad are available as follows:

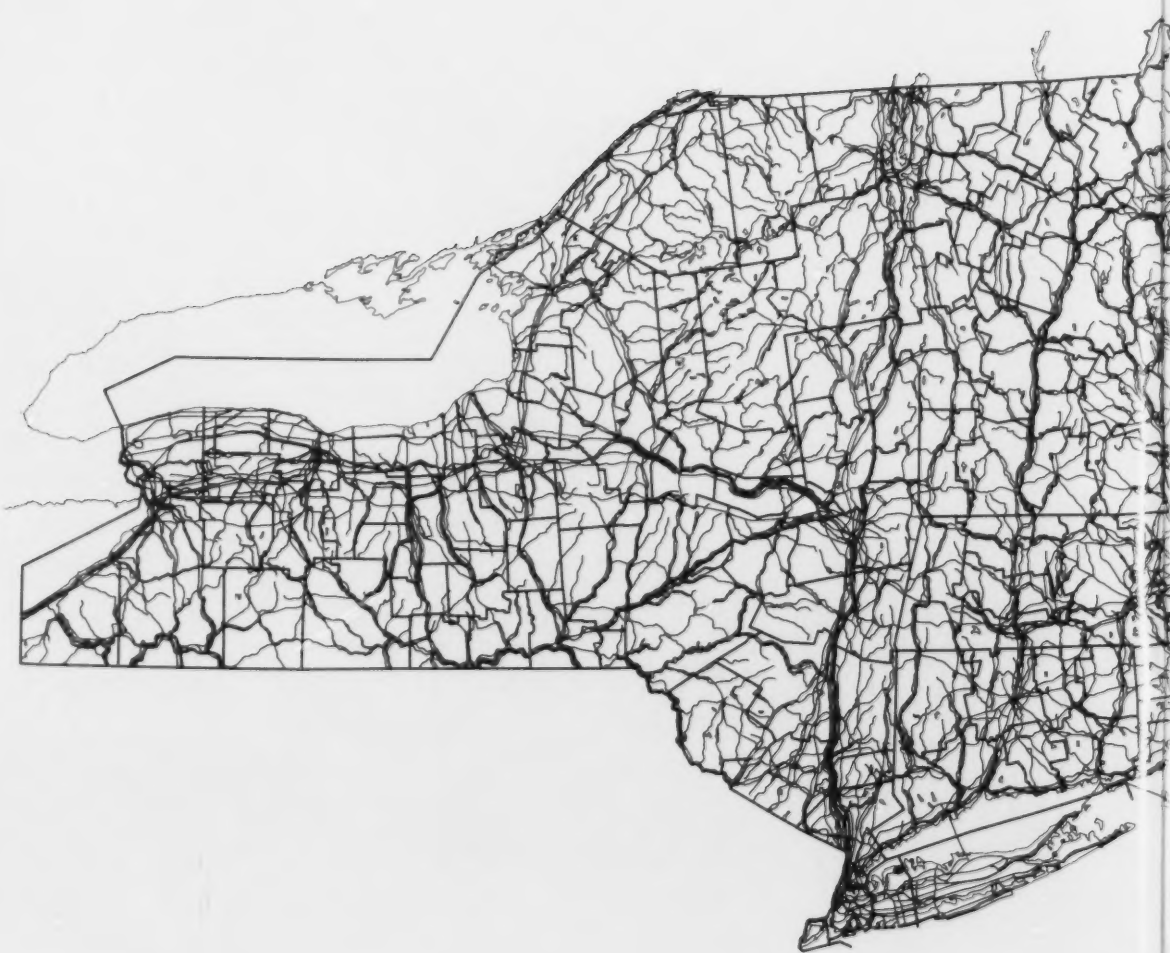
- Screened imagery on diazo paper.
- Continuous-tone imagery on photo paper.
- Continuous-tone imagery on opaque stable-scale film.



US GeoData

US GeoData computer tapes contain cartographic and geographic data in digital form. NCIC distributes several types of digital cartographic data such as digital elevation models, digital line graphs, and land use/land cover and associated maps data.

Digital elevation models (DEM's) are digital records of terrain elevations for ground positions at regularly spaced intervals. DEM data are available at scales of 1:24,000 and 1:250,000. The 1:24,000-scale DEM data are produced by the U.S. Geological Survey in 7.5- × 7.5-minute blocks with a 30-meter ground distance between elevation points. The 1:250,000-scale DEM data, produced by the Defense Mapping Agency (DMA), are available in 1° × 1° blocks with a 3 arc-second ground distance between elevation points.



Digital line graphs (DLG's) are line map (planimetric) information in digital form. DLG data are available from 1:2,000,000-scale maps and the 7.5- and 15-minute topographic quadrangle series. DLG's from 1:2,000,000-scale maps contain information on the following base categories: transportation, hydrography, and boundaries. DLG's from the 7.5- and 15-minute topographic quadrangle series contain information on selected base categories such as transportation, hydrography, boundaries, and the U.S. Public Land Survey System.

Land use and land cover digital files available at 1:250,000- and some at 1:100,000-scale provide information on urban or built-up areas, agricultural land, rangeland, forest land, water, wetlands, barren land, tundra, and perennial snow or ice. Digital data from associated maps contain information on political units, hydrologic units, Federal land ownership, and census county subdivisions.

Digital line graphs for 1:2,000,000-scale topographic map of New England States. (Plotted at scale of 1:4,000,000 to show entire region).

Uses

In digital form, DEM's are valuable for regional terrain modeling, land use studies, and other scientific and engineering applications. DLG's are useful for the production of cartographic products such as base maps. DLG's may also be used for various kinds of spatial analyses, and for combining with other geographically referenced data to conduct automated analyses in support of various decision-making processes. Land use and land cover and associated maps digital data may be transformed to other map projections. The data are useful in producing area summary statistics, selecting specific portions of a map to study in detail, and displaying single themes such as bodies of water.

How to order

From any NCIC office request a free information sheet, order form, and price list. If you need additional information, NCIC will send you a users guide for the type of data you are interested in. Place your order for US GeoData with any NCIC office. With your order, enclose a money order or check payable to the U.S. Geological Survey.

Price

Prices are indicated on the US GeoData price list available upon request from NCIC.

Aircraft photos

This typical aerial mapping photo shows a portion of Pittsburgh, Pennsylvania.

Aircraft photos, including mapping photos from the Geological Survey and other government agencies, are characterized by continuous area coverage of map or administrative units, stereoscopic overlap, rigid specifications, and quality control. The photos are black and white, color, and color infrared and have less than 5% cloud cover.

You may order prints that provide either stereoscopic or pictorial overlap. When viewed through a stereoscope, stereo pairs provide a three-dimensional image of the ground. Photos with pictorial overlap show the ground in only two dimensions. Stereoscopic coverage requires about twice as many prints as pictorial coverage.

Contact prints are the same size as aerial negatives approximately 9″×9″ (22.86×22.86 cm).

Contact prints are the same size as the original negatives, approximately 9″×9″ (22.86×22.86 cm).

Prints are normally processed from whole negatives; prints of selected parts of negatives can be processed but usually carry a processing charge that is three times the standard cost.

Prints of aircraft block photos are not stocked. Each order is custom processed.

Enlargement modifications of 2×, 3×, and 4× can be ordered as standard products. The scale that is derived from a 2×, 3×, or 4× enlargement depends on the focal length of the camera and the flying height of the aircraft used in the photographic contract or reported by the contractor. In most cases, you may also order enlargements to an exact ratio or to a specific scale. This, however, involves custom processing and normally carries a processing charge that is three times the standard cost.

Uses

Almost any planning or engineering project that deals with the shape, size, or location of land, water, and cultural features can be aided by aerial photos. Mapping photos can serve as a map substitute or as valuable complements to existing maps.

How to order

1. From any NCIC office or the EROS Data Center, request a *Geographic Computer Search Inquiry Form* and a current price list.

2. Complete the *Geographic Computer Search Form* and mail it to the nearest designated Mapping Center NCIC office.

3. Based on the reply to your inquiry, place your order with the nearest NCIC office or other designated government agency.

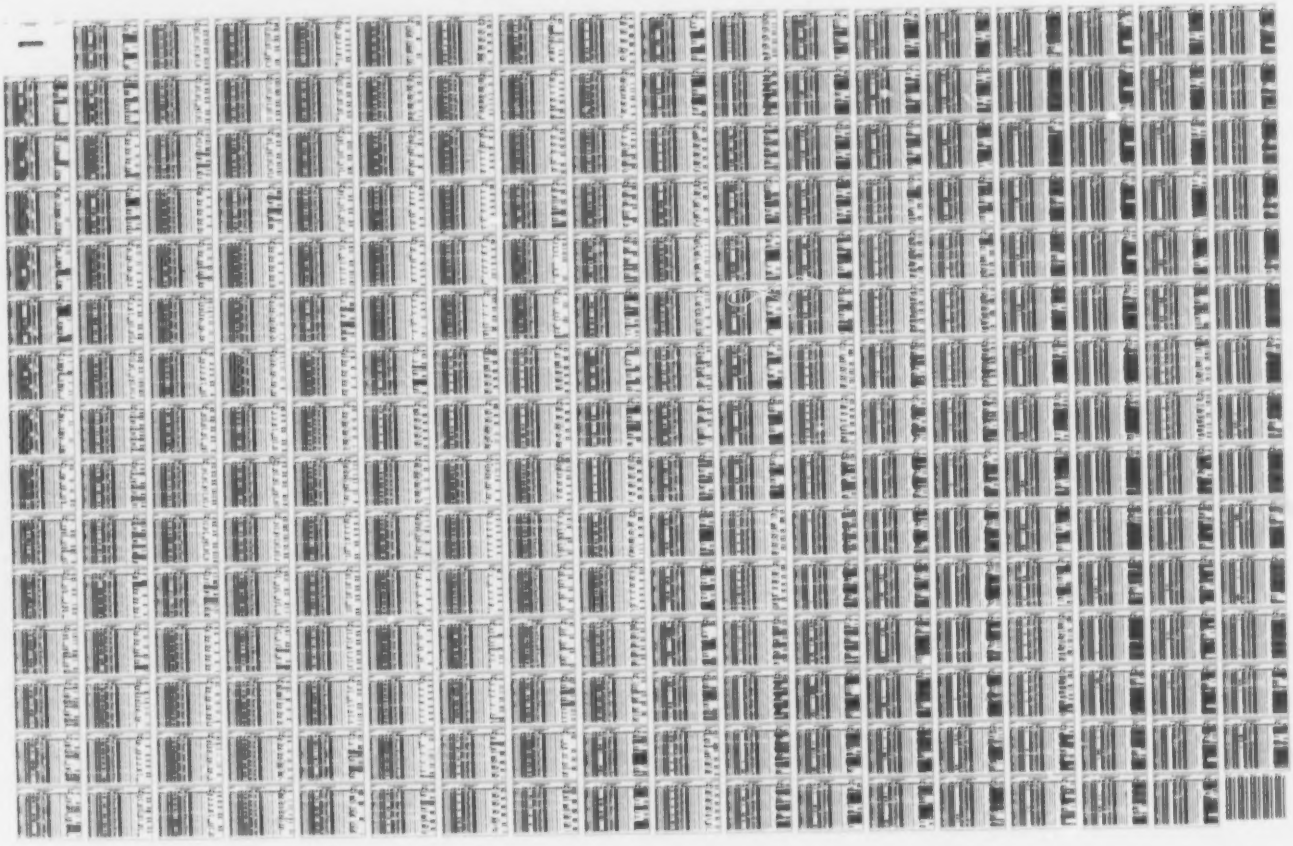
4. With your order, enclose a money order or check payable to the Geological Survey or designated government agency.

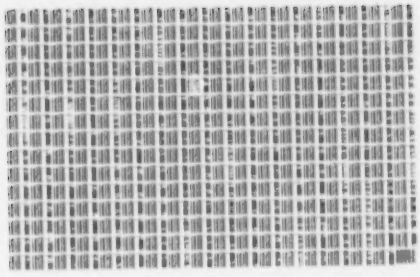
Price

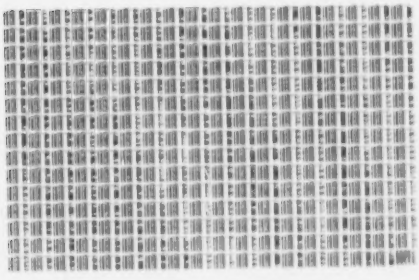
Prices vary from a few dollars for a 9″×9″ (22.86×22.86 cm) print in black-and-white to $50 or more for a 36″×36″ (91.44×91.44 cm) print in color. (Please note that most photos are available only in black and white).

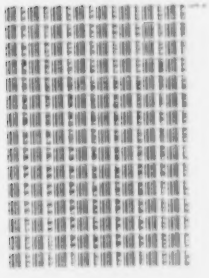
Aerial Photography Summary Record System

APSRS microfiche. May contain up to 270 pages of information.









The Aerial Photography Summary Record System (APSRS) is a data base which provides information on the aerial photographic coverage of the United States. APSRS includes information on photographs obtained by Federal, State, and municipal government agencies, and private industry.

Summarized APSRS holdings are available on microfiche which are updated every six months. The microfiche, organized by State(s), list the aerial photographs available, the agencies or firms (identified by codes) that have the photographs, the dates and scales of the coverage, the type of film used, and the percent of cloud cover. Status codes are used to distinguish completed projects from planned projects.

All information on the fiche is arranged according to the latitude and longitude of the southeast corner of the standard U.S. Geological Survey 7.5-minute quadrangle that covers the area. For quick access to any area desired, each fiche contains an index block which identifies the latitude and longitude of the frames listed on that fiche.

At the top of each fiche, shown in eye-readable type, are the State(s), date the fiche were produced, and the number of fiche in the set. In addition, the first fiche in each set provides an explanation of the fiche format.

After locating the desired aerial photographic project(s), the individual photographs can be obtained by writing to the appropriate APSRS contributor.

Uses

APSRS is used as an index to quickly identify aerial photographic projects throughout the U.S., and to select photographs taken at desired dates and scales.

How to order APSRS microfiche sets

1. From any NCIC office, request an APSRS Order Form.

2. Place your order for APSRS microfiche with any NCIC office.

3. Specify the sets of microfiche you want by State.

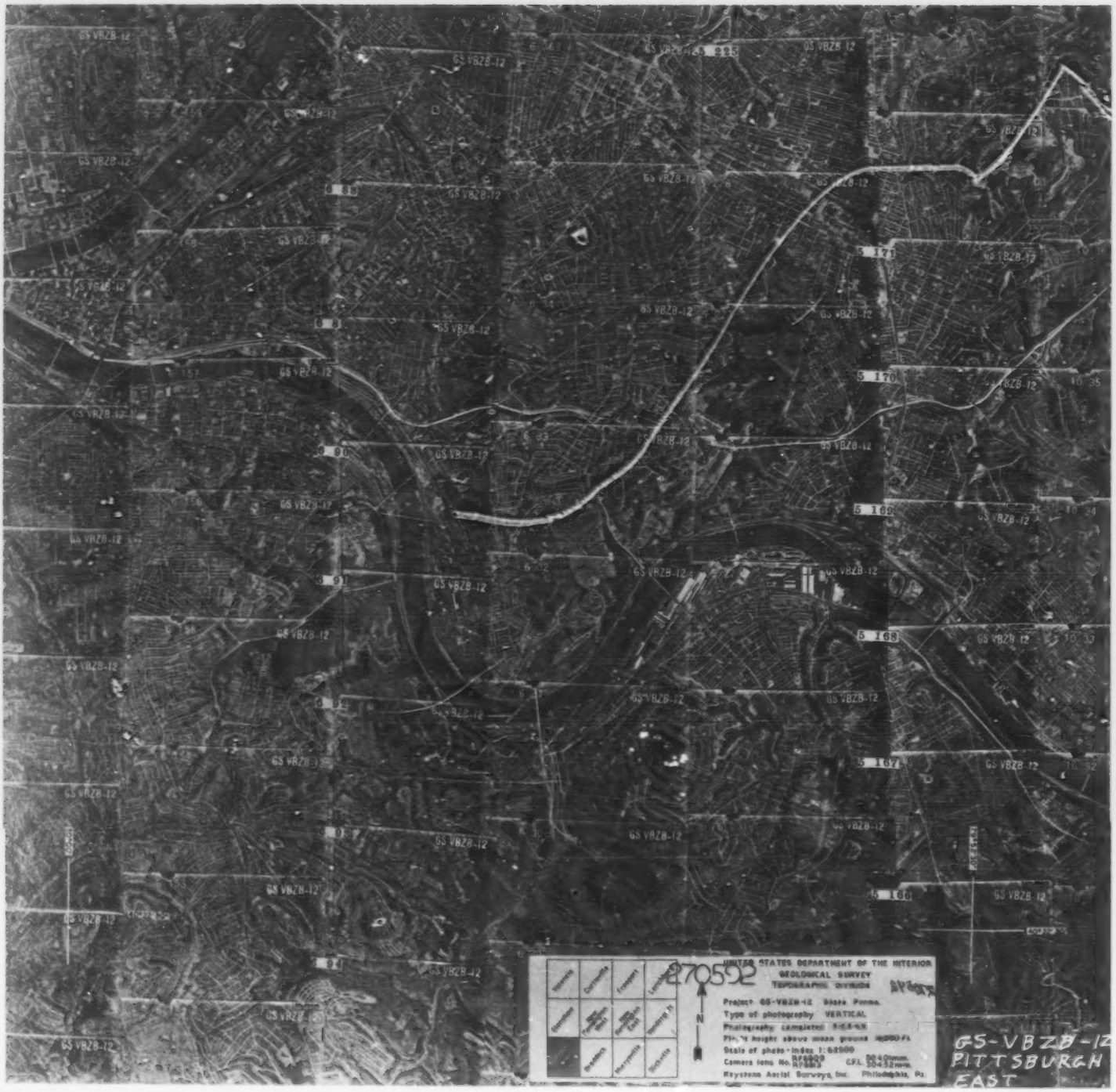
4. With your order, enclose a money order or check payable to the Geological Survey.

Price

Microfiche prices are contained on a separate list available upon request from NCIC.

Search and inquiry systems—Photoindexes

Aerial photo coverage is keyed to a photoindex (IVBZB00-270592).



Photoindexes are available for almost all Geological Survey aerial mapping photos. The indexes show the assembly of prints in standard 7.5-minute, 15-minute, and 30-minute quadrangle units.

Some 50,000 photoindexes are currently available. The indexes enable you to select prints covering the area you are interested in. If large areas are involved, the indexes are an essential guide for selecting the prints you require.

Individual aerial mapping photos are not geographically accessible and are not identified by the Aerial Photography Summary Record System (APSRS) or in computer search listings. A photoindex is needed to order individual aerial photos unless the project, roll, and frame numbers are already known.

Most photoindexes are a standard size (10″×12″). Some are larger (usually 20″×24″).

Uses

Photoindexes provide access to aerial photos held by the Geological Survey and other government agencies. From the photoindex, you can find the project, roll, and frame numbers needed to complete an *Aerial Mapping Photography Order Form.*

How to order

1. Send an inquiry to any NCIC office or the EROS Data Center. In the inquiry, give the geographic coordinates of the area you are interested in, and ask which photoindex(es) cover the area.

2. Based on the reply to your inquiry, order the photoindex(es) and request an *Aerial Mapping Photography Order Form* from any NCIC office, the EROS Data Center, or other designated government agency. With your order, enclose full payment by money order or check payable to the Geological Survey or designated government agency.

Price

Request free price list or ask your nearest NCIC office.

Aircraft photos (special)

NASA aerial photo of New York City (6306000400-Roll, Frame 109).

Cultural detail is easily identified in this NASA aerial photo of Boston, Massachusetts (6128D0210-Roll, Frame 31).

You may order copies of NASA aircraft photos over many parts of the United States. The photos do not cover all areas of the United States; however, they do cover most major metropolitan areas. They were made to support research in the development of instruments and techniques for Earth resources investigations.

Most of the photos provide high-altitude, small-scale coverage. Cloud cover is present in some photos, but most coverage clearly shows ground features such as roads, farms, and cities.

The photos are available in black and white, color, or color-infrared. They are in a wide variety of formats ranging from flights at altitudes of a few thousand feet (1,000 m) to altitudes above 60,000 feet (18,000 m).

The high-altitude photos are usually available in 9″×9″ (22.86×22.86 cm) film format at approximate scales ranging from 1:60,000 to 1:120,000. Each 9″×9″ photo, at a 1:120,000 scale, shows an area of about 17 miles (27 km) on a side.

NASA Aerial Photography is indexed by individual photo or by strips that describe two or more successive overlapping photos along an aircraft flight line.

Uses

Streets and buildings are recognizable on some NASA photos. These photos have filled the demand for a "photo of my home town." They also provide useful data for soil surveys, recreational surveys, highway surveys, range management, and urban planning.

How to order

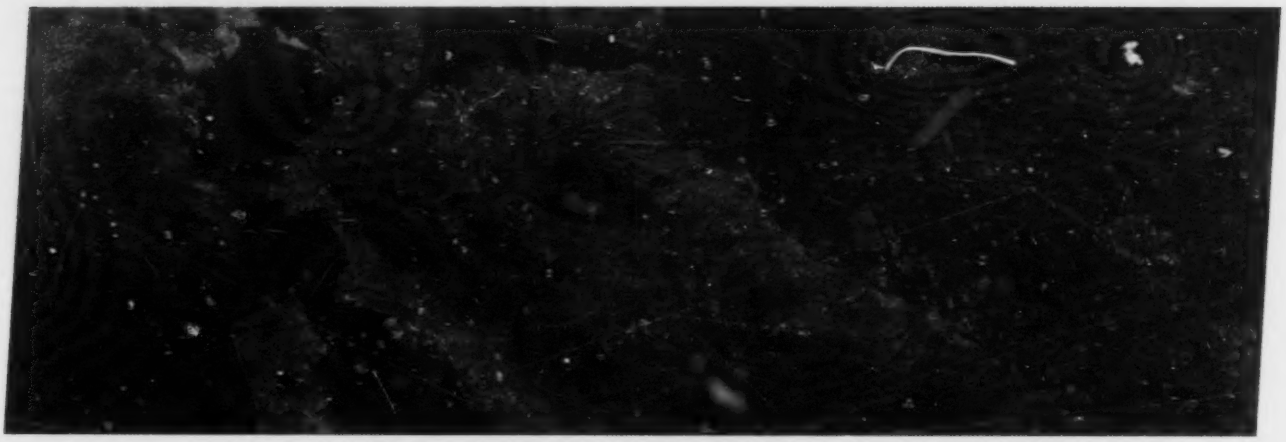
From any NCIC office or the EROS Data Center, request a *NASA Aircraft Photography Order Form* and a *Geographic Computer Search Inquiry Form.*

Price

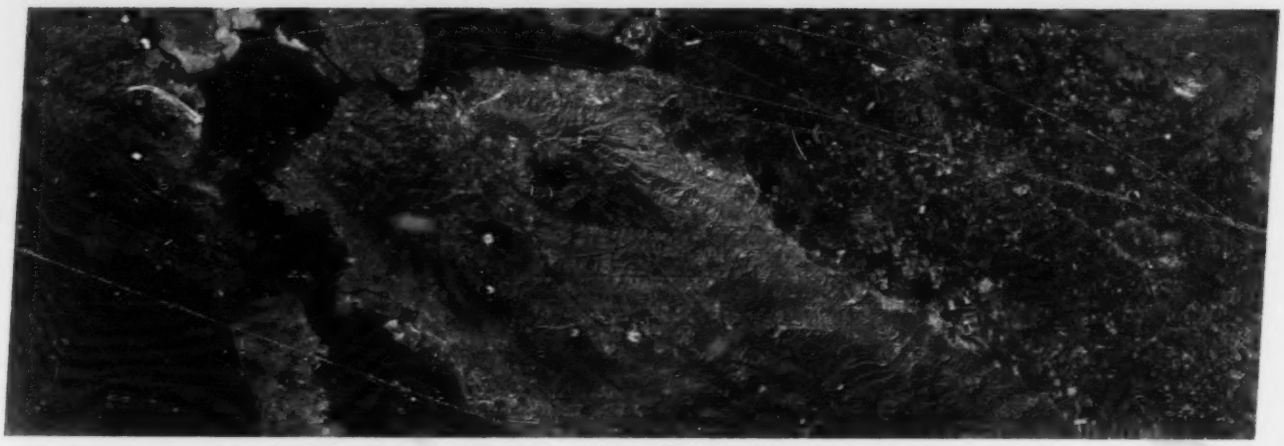
Prices range from a few dollars for a 2.2″×2.2″ (5.588×5.588 cm) black-and-white film positive to $50 or more for a 36″×36″ (91.44×91.44 cm) paper print in color.

Landsat imagery

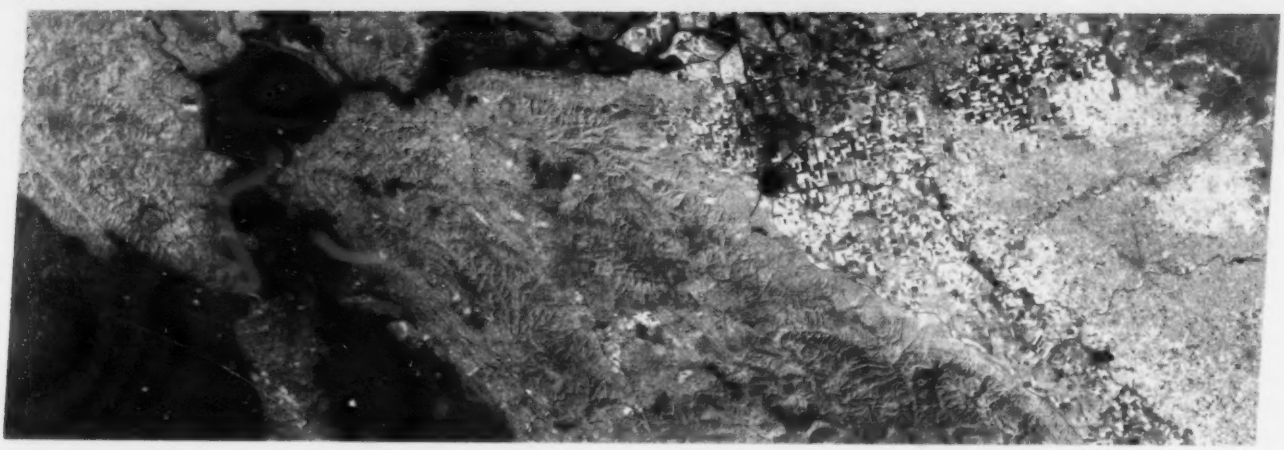
San Francisco, California.
Band 4



Band 5



Band 7



You may order a variety of photo reproductions of Landsat imagery. Landsat circles the Earth roughly 14 times every day. From an orbital altitude of 920 km (570 miles), it provides repetitive coverage of the Earth's features every 18 days.

Landsat carries three data acquisition systems:

- A multispectral scanner (MSS) that has four spectral bands (band 4, the green band; band 5, the red band; bands 6 and 7, the near-infrared bands). Landsat 3 has a fifth spectral band (band 8) also known as the thermal band.

- A return-beam vidicon (RBV) or television system.

- A data collection system (DCS) that relays environmental data from ground-based platforms.

The MSS, the main sensing system, acquires images that cover 115 miles (185.075 km) square. Because the Earth rotates and the Landsat images are created by an optical-mechanical scanner, the MSS images are parallelograms rather than squares. The sides are parallel to the orbital track of the satellite on the Earth's surface.

RBV images, on the other hand, have a square format, because the image is acquired instantaneously.

Band 4 reveals movement of sediment-laden water and delineates areas of shallow water, such as shoals and reefs.

Band 5, called the red band, emphasizes vegetation, the boundary between land and water and landforms.

Band 7, one of two near-infrared bands, penetrates atmospheric haze and also emphasizes vegetation, the boundary between land and water, and landforms.

Band 8 (Landsat 3 only) is used to detect geysers, volcanoes, and other heat sources. Only a limited amount of band 8 imagery is available.

False-color composites of individual scenes can be made by using color filters to expose two or three of the black-and-white bands on color film. These images show:

- Healthy vegetation in bright red.

- Clear water in black.

- Sediment-laden water in blue or blue-gray.

Black-and-white images from all four bands can be ordered for each scene. When viewed through a set of color filters, the black-and-white images reveal differences in the same scene.

A map keyed to the Landsat World-Wide Reference System is available as a guide for selecting Landsat images.

Landsat data is beamed directly from the satellites to ground receiving stations around the world. The receiving stations relay the information to the Goddard Space Flight Center (GSFC) in Greenbelt, Md., via a commercial communications satellite that has been in operation in geosynchronous orbit since 1976. The GSFC processes the data into high density tapes (HDT) and relays the information to the EROS Data Center via the same commercial satellite. There is an approximate 10-14 day delay from the time the signals are first received on the ground to the time the data is available to the public at the EROS Data Center.

Training and assistance in techniques for analysis of remotely sensed data are available from the Applications Assistance Branch, at the EROS Data Center.

Inquiries can be made by phone, letter, or personal visit; however, the Applications Assistance Branch should be contacted before making travel plans.

Other Landsat products include:

- Images of selected major metropolitan areas.

- Computer-compatible tapes (CCT).

- A set of 470 "Selected Landsat Scenes" of the conterminous United States.

Uses

Landsat data are being used in: Land-use planning. Agriculture. Forestry. Geography. Geology. Hydrology. Range management.

How to order

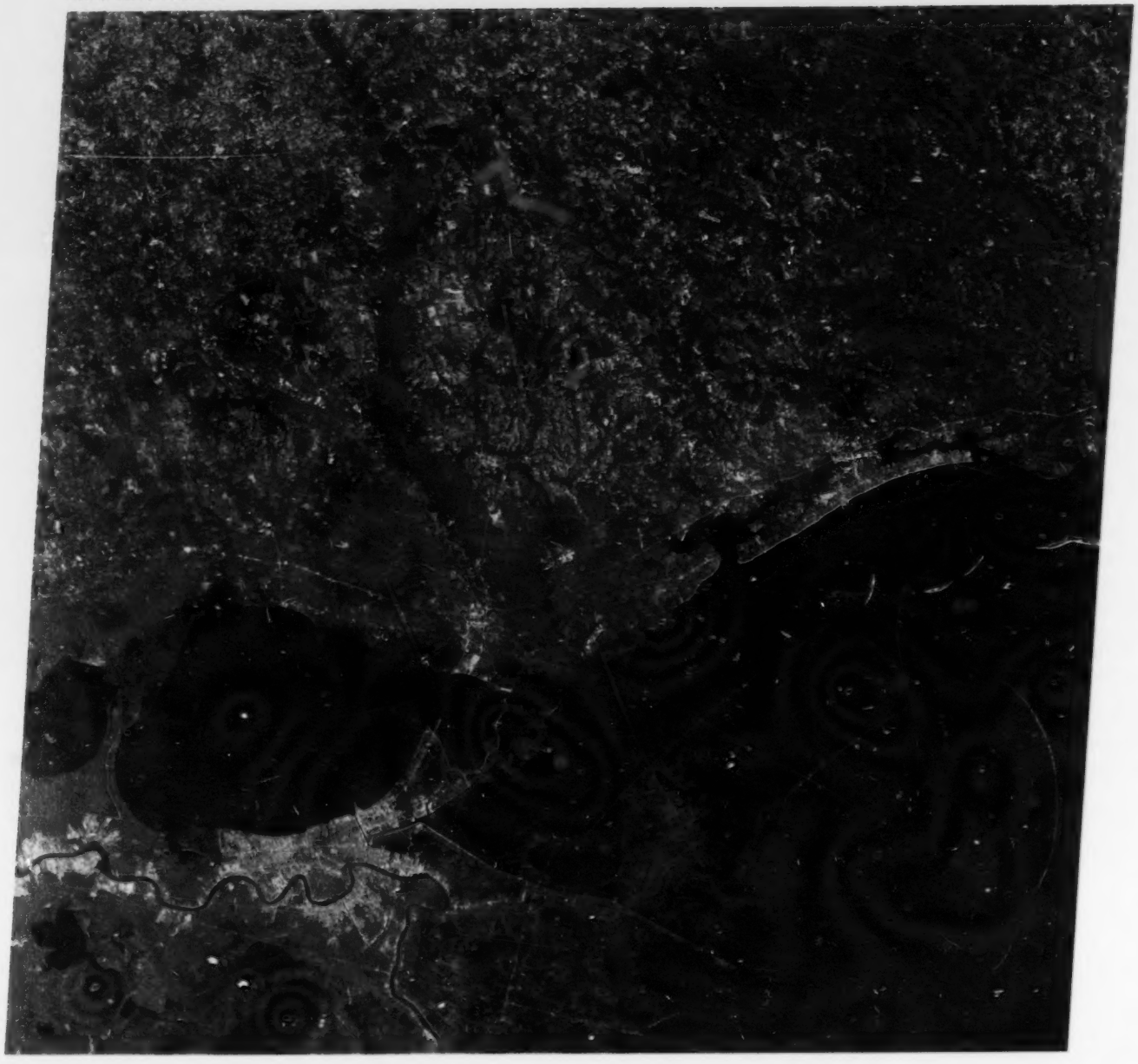
From any NCIC office or the EROS Data Center, request a booklet on *The EROS Data Center*, an *Order Form for Landsat Products*, a *Selected Coverage Order Form With Map*, and a *Geographic Computer Search Inquiry Form*.

Price

Prices depend on size and colors. Ask for the separate price list.

Major U.S. metropolitan areas

New Orleans, Louisiana.



Preselected color and color-infrared photos are available for over 100 U.S. cities. The selection was made from NASA aircraft photos, Skylab photos, and Landsat imagery. Coverage of some metropolitan areas is not available in all three formats.

Uses
Color and color-infrared prints of major U.S. metropolitan areas are useful for regional planning and general viewing.

How to order
From any NCIC office or the EROS Data Center, request a *Major U.S. Metropolitan Area Order Form.*

Price
Color prints range in size from a 9″×9″ (22.86×22.86 cm) NASA Aircraft paper print to a 34.2″×34.2″ (86.87×86.87 cm) Skylab paper print. Ask for the separate price list.

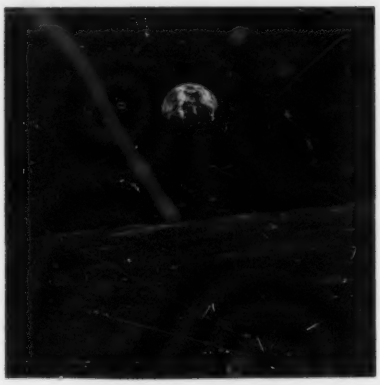
San Francisco, California.

Manned spacecraft photos

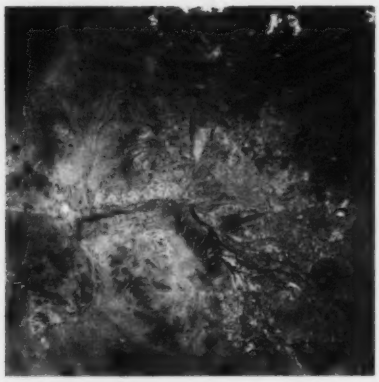
Experimental photos from the Apollo, Gemini, and Skylab manned spacecraft programs can be ordered from the EROS Data Center.

Coverage of limited areas of the Earth was acquired by the Apollo and Gemini missions.

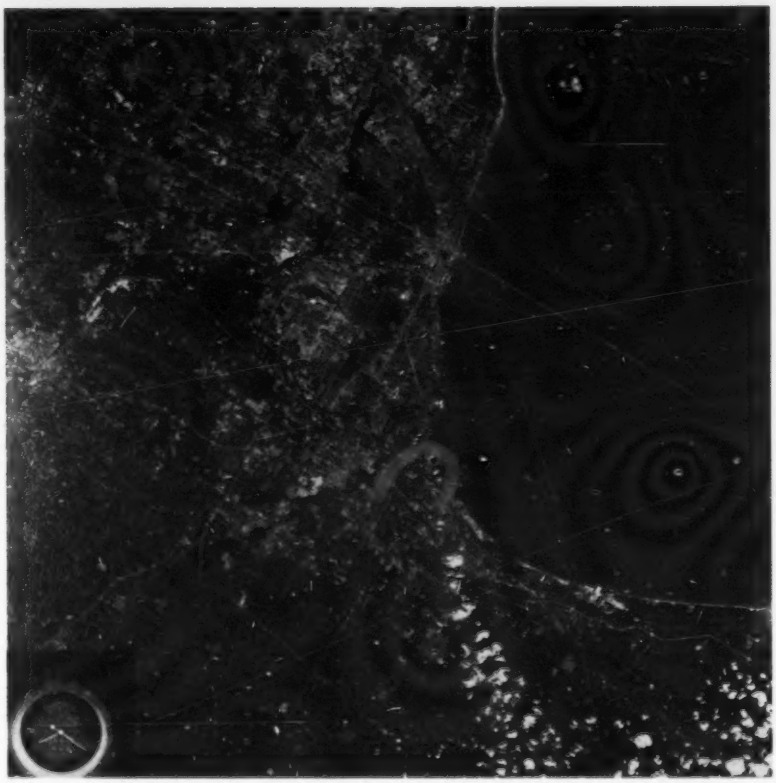
Earthrise.



Phoenix, Arizona.



Chicago, Illinois.



Apollo 9 conducted a special photographic experiment, designated S-065, in March 1969. The experiment used four 70-mm cameras to acquire three types of filtered black-and-white and one type of false-color infrared photos. The area covered by each frame of S-065 photography is approximately 100×100 miles (160×160 km).

Photos from Gemini were acquired by handheld 70-mm cameras.

The Skylab Program consisted of one unmanned and three manned missions. The spacecraft traveled in orbits of 270 miles (430 km) above the Earth and acquired photography, imagery, and other data of selected areas between latitudes 50°N and 50°S. The photos do not provide complete, systematic, cloud-free coverage.

Skylab used the Earth Resources Experiment Package (EREP) which consisted of six remote sensing systems (S190A, S190B, S191, S192, S193, and S194). Three systems, the S190A, S190B, and S192, were imaging systems. The S190A system was a six-camera array that was designed to provide high quality photography. The system used filtered black-and-white, color, and false-color films. The area covered by each image of this system is 100×100 miles (160×160 km). The S190B system was a single Earth terrain camera that was selected to provide high resolution photography. The area covered by each frame of this system is 70×70 miles (110×110 km).

Uses

Manned spacecraft imagery is used for: Land-use planning. Agriculture. Forestry. Geography. Geology. Hydrology. Range management.

How to order

From any NCIC office or the EROS Data Center, request a booklet on *The EROS Data Center,* a *Manned Spacecraft Photography Order Form,* and a *Geographic Computer Search Inquiry Form.*

Price

Reproductions of manned spacecraft imagery range in price, depending on size and color. Ask for the separate price list. For most manned spacecraft imagery, only contact film transparencies are provided at standard prices. Prints and enlargements may be prepared on custom order.

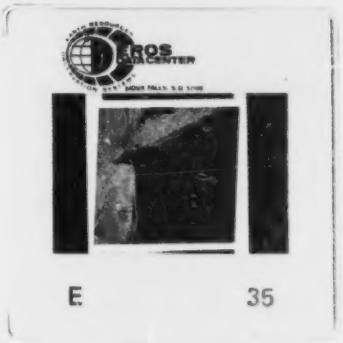
35–mm slides

You can order 35-mm mounted slides of Landsat false-color composites and color/color-infrared Skylab and NASA photography over selected Major U.S. Metropolitan Areas and other 35-mm slides that are available from the public affairs files.

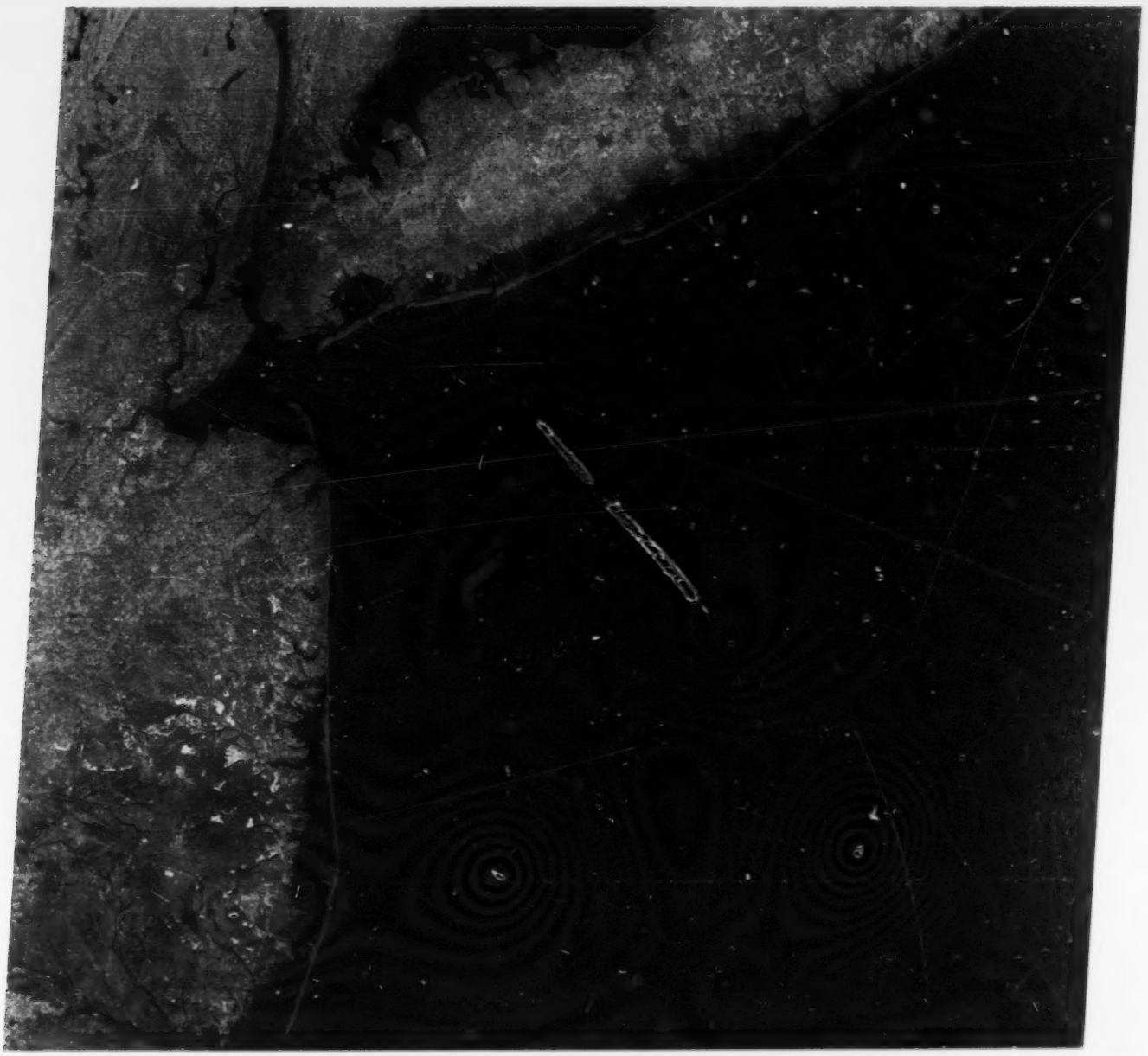
Uses
Slides of spacecraft and aircraft photos can be used in slide presentations.

How to order
Contact any NCIC office or the EROS Data Center. There is no specific form for ordering slides.

Price
Mounted 35-mm color duplicates are prepared from available printing masters. See separate price list.

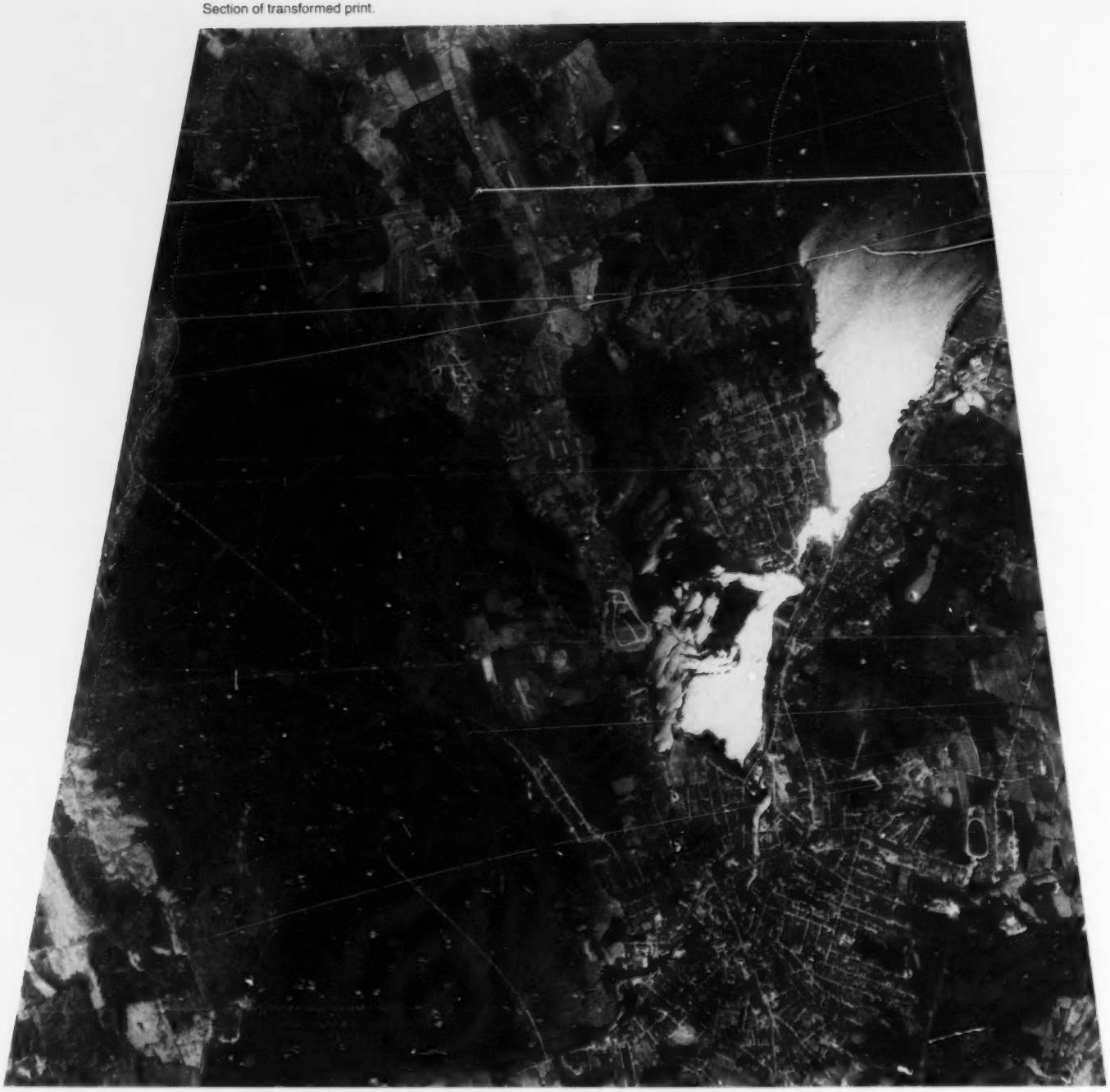


Metropolitan New York.



Transformed prints

Section of transformed print.



Twin low-oblique aerial photos have been made of a few selected areas of the United States. Uniform-scale prints can be made from the twin low-oblique negatives by using a fixed transforming printer to remove scale distortions caused by the 20-degree camera tilt.

The image area of the transformed print is trapezoidal rather than square. Transforming printers are fixed at one ratio. Enlarged or reduced transformed prints are not available.

Uses

Transformed prints allow vertical viewing of twin low-oblique photos. Pairs of either twin low-oblique convergent or transverse transformed prints can be viewed stereoscopically.

How to order

1. From any NCIC office, request a leaflet on *Low-Oblique Photography,* an *Aerial Mapping Photography Order Form,* and a *Geographic Search Inquiry Form.*

2. Based on the information provided by the NCIC office, place your order with the designated source of the required transformed prints.

3. With your order, enclose full payment by money order or check payable to the Geological Survey.

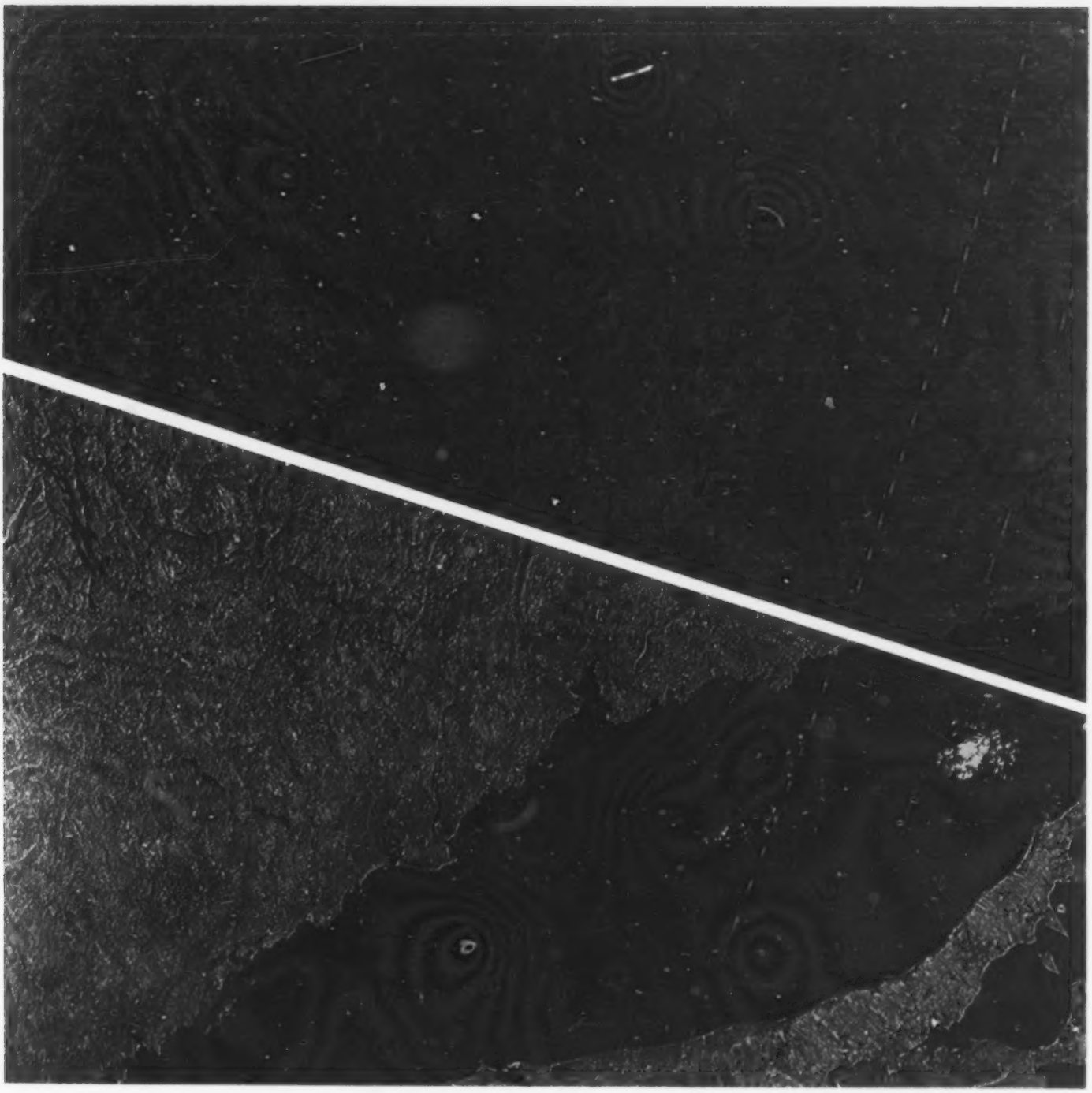
Price

See separate price list.

Section of twin low-oblique.

Computer-enhanced Landsat scenes

Top: Landsat false-color composite (New York—Connecticut—Rhode Island) Bottom: Partially-enhanced version of same scene.



EROS Digital Imagery Processing System (EDIPS). Using advanced digital image processing techniques, all Landsat scenes received after February 1979 have been improved by radiometric corrections, geometric corrections, edge enhancement, contrast enhancement, and haze removal.

EROS Digital Image Enhancement System (EDIES). A limited number of computer-enhanced Landsat scenes, produced in preparation for EDIPS, are available from the EROS Data Center. The enhancements of most scenes includes destriping, edge enhancement, contrast enhancement, and synthetic line generation. A list of available scenes, along with ordering and pricing information, may be obtained from User Services, Attention: Computer-Enchancements, EROS Data Center, Sioux Falls, SD 57198.

Colored paper prints of these computer-enhanced scenes are offered on either Cibachrome or Kodak 2212. Cibachrome provides a high-gloss finish on a plastic base material. Kodak 2212 provides a light matte surface on a resin-coated paper.

Uses

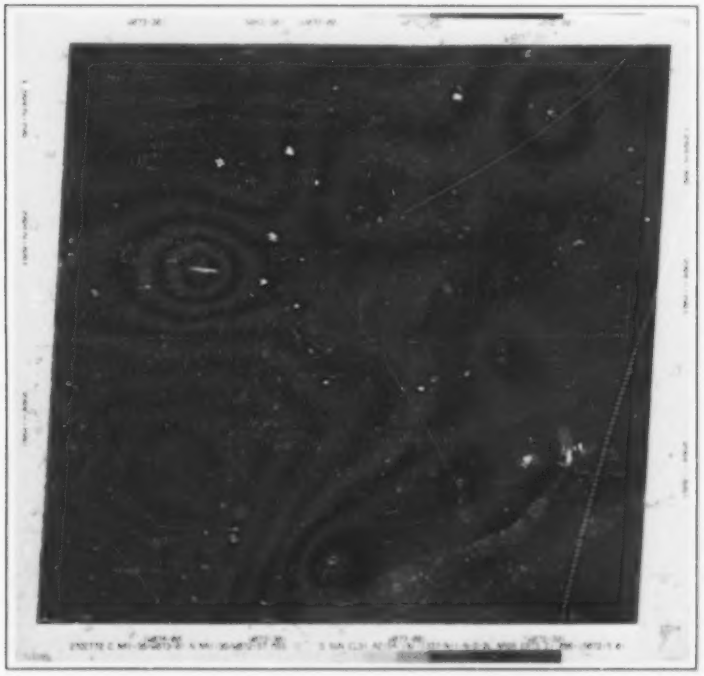
The EROS Digital Image Enhancement System (EDIES) was designed as a test system for the new EROS Digital Image Processing System (EDIPS). The image enhancement and restoration algorithms were carefully designed to reveal additional textural spectral content.

How to order

From any NCIC office or the EROS Data Center, request a factsheet on the *EROS Digital Image Enhancement System,* a factsheet on the *EROS Digital Imagery Processing System,* a list of available computer-enhanced scenes, and a *Computer-Enhanced Landsat Products Order Form.*

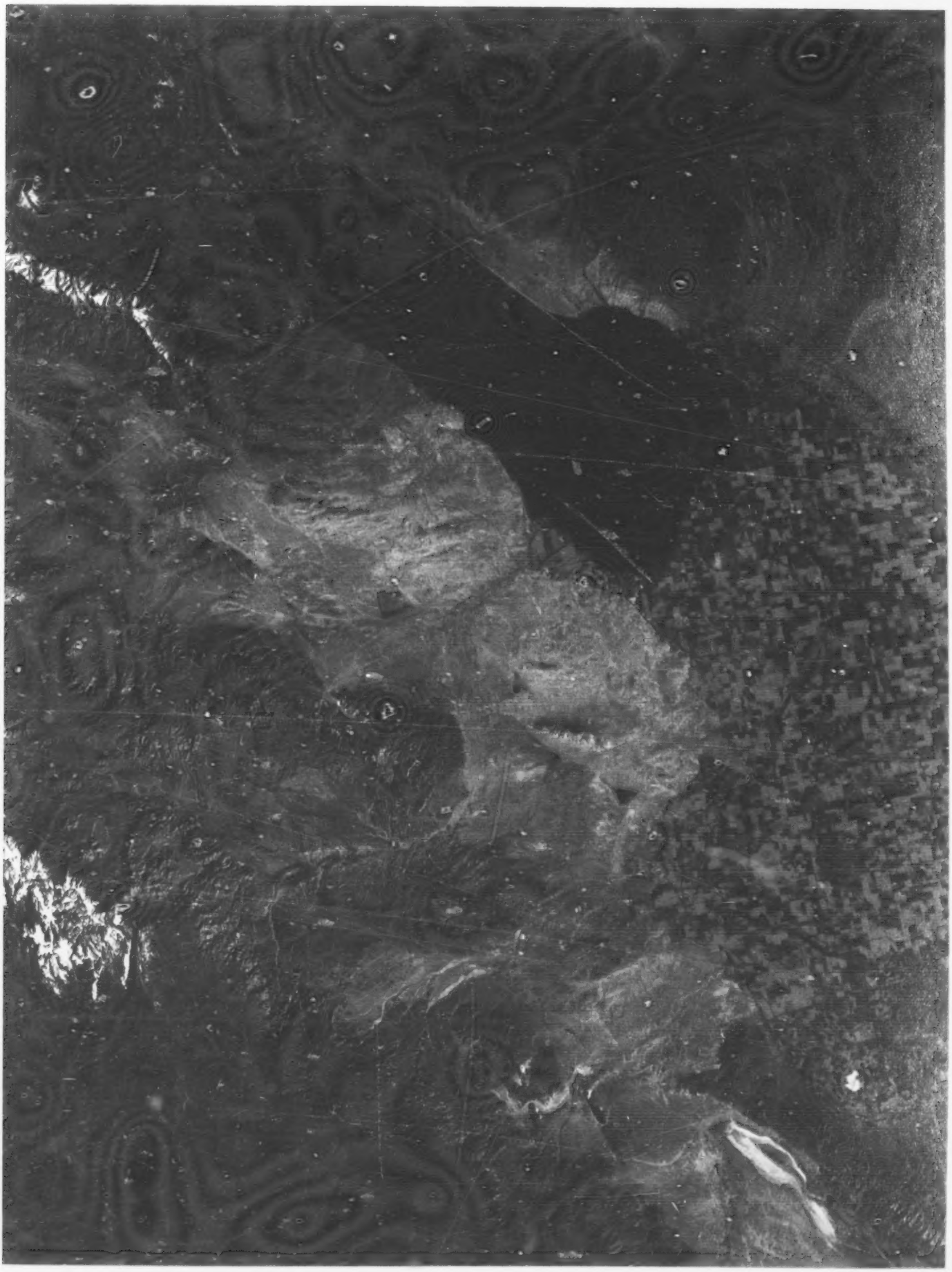
Price

See separate price list.
Various formats are available, ranging from 7.2″×7.3″ (18.288×18.542 cm) paper print in black and white to a 29.2″×29.2″ (74.168×74.168 cm) paper print of an infrared composite in color.



Landsat scene. Partially-enhanced false-color composite, 1976.

Salton Sea. Fully-enhanced false-color composite, 1979.



Diapositive plates or films

Diapositive plate.

Diapositive plates or films are used in photogrammetric plotting instruments to compile maps of various scales and contour intervals.

They are produced from aerial photos as contact prints on glass plates 0.25″ (0.635 cm) or 0.06″ (0.152 cm) thick or on diapositive film (0.007″).

Uses

Diapositives are used in photogrammetric plotting instruments to obtain stereoscopic models.

How to order

1. From any NCIC office, request an *Aerial Mapping Photography Order Form.*

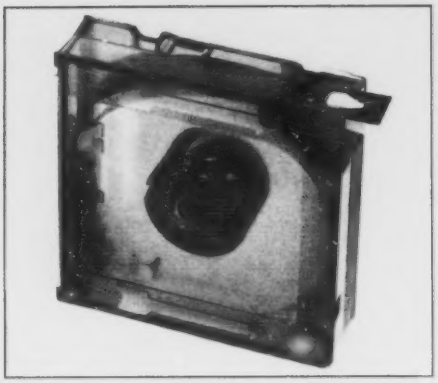
2. On the order form, specify whether you want:
(a) 0.25″ (0.635 cm) or 0.06″ (0.152 cm) thick glass plates or film (0.007″) and
(b) emulsion-to-emulsion or through-the-base film printing.

3. With your order, enclose full payment by money order or check payable to the Geological Survey.

Price

See separate price list.

Microfilm



Cassette.

You can order cassette microfilm copies of Geological Survey photoindexes; NASA aircraft photography; Apollo, Skylab, and Gemini photography; Landsat imagery; and other data stored at the EROS Data Center.

Cassettes of 16-mm microfilm are available in black and white and/or color. The more recent Landsat images are being filmed on 105-mm microfiche rather than on 16-mm rolls.

Uses

This microfilm can be used to establish an aerial and space imagery browse file or to acquire blocks of such data for general research.

How to order

Contact any NCIC office or the EROS Data Center. There is no specific form for ordering microfilm products.

Price

16-mm Microfilm Cassette
Black and white.
Color.
See separate price list.

Computer compatible tapes

Computer Compatible Tapes (CCT) of Landsat data are available in digital form on standard ½″-wide (12.7 mm) magnetic tapes. The tapes can be ordered in a 9-track format at 800 or 1600 bpi.

The number of CCTs required (one to four) for the digital data corresponding to one Landsat scene depends on the format requested. Because the data for the four MSS bands are interleaved among the tapes, you will need all the tapes to re-create an entire scene.

Uses

Computer Compatible Tapes are used to digitally enhance individual Landsat scenes for use by researchers in agriculture, geology, hydrology, and other natural resource studies.

How to order

From any NCIC office or the EROS Data Center, request the *Landsat Standard Products Order Form.*

Price

See separate price list for:
9-track, 800 bpi tape, MSS band set
9-track, 1600 bpi tape, MSS band set
9-track, 800 bpi tape, one RBV subscene (Landsat 3)
9-track, 1600 bpi tape, one RBV subscene (Landsat 3)
9-track, 800 bpi tape, set of four RBV subscenes (Landsat 3)
9-track, 1600 bpi tape, set of four RBV subscenes (Landsat 3)

Geological Survey, NASA, and manned spacecraft photos and Landsat images have been filmed on 105-mm × 148-mm (4.134″ × 5.827″) microfiche. The microfiche also contains the imagery date, frame identification, scale, film type, and holding agency.

A sample of the microfiche record of Geological Survey aerial photography is shown below. In the upper left corner of the microfiche record is an image of a topographic map at either the 1:250,000 scale or 1:1,000,000 scale. The areas on the microimage covered by the photo or line index are outlined or numbered. These numbers reference the description of the photography listed on an adjacent frame which is located in the upper right of the microfiche. These numbers also reference photo or line indexes on the bottom of the fiche from which individual frames can be selected.

Micrographic indexes Search and inquiry systems

Uses

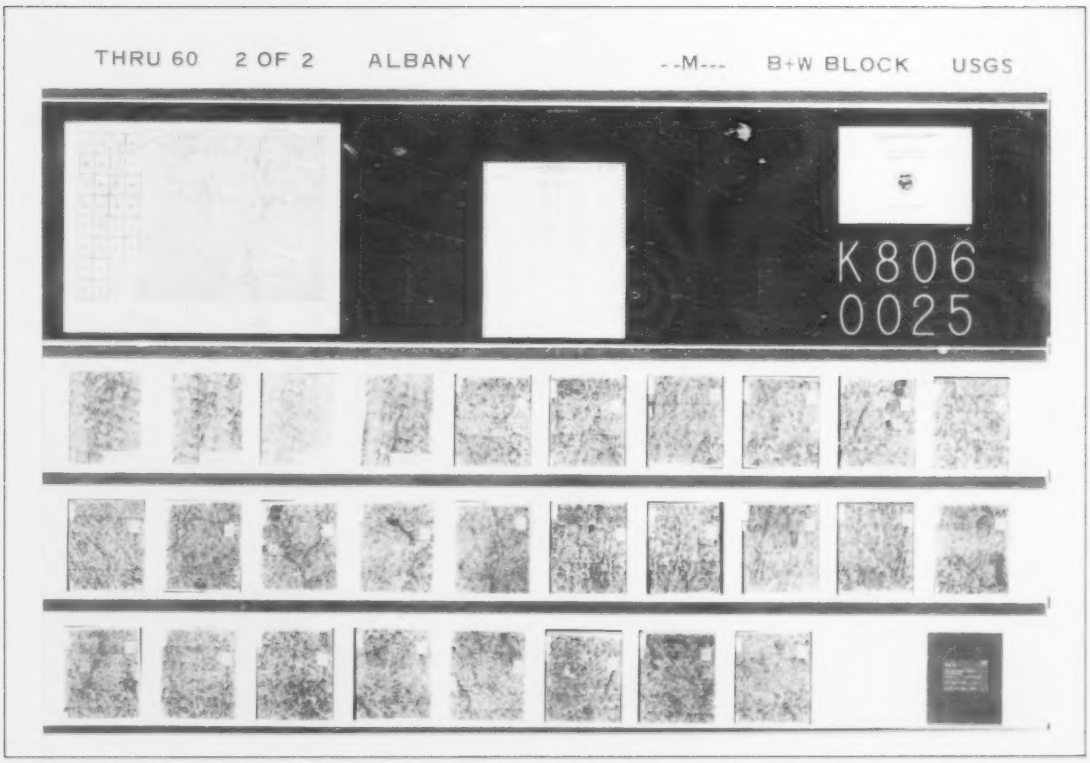
Microfiche indexes provide an inexpensive, accurate source of information about Geological Survey, NASA, and manned spacecraft photos and Landsat images. They enable users to perform geographic searches on their own.

How to order

From any NCIC office or the EROS Data Center, request a *Micrographic Indexes Order Form.*

Price

See separate price list.



Geographic search and inquiry systems

Computer printout.

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                                        E R O S  D A T A  C E N T E R                                        REPORT NO. QL001-1
                                      SIOUX FALLS, SOUTH DAKOTA  57198                                      DATE       09/06/79
                                CONTACT NUMBER 0004622001          TERMINAL T63AF1                         TIME       08:47
                                    WASHINGTON D.C.. AND VICINITY                                          PAGE          1

105 ACCESSIONS                                    RECTANGLE  RETRIEVAL

     LATITUDE RANGE              LONGITUDE RANGE              AGENCY QUALITY CLOUD-COVER  RECORDING-TECH
N38D05M     N39D15M        W076D45M     W077D15M               ANAP    5        30%       VERTICAL


                                                  DATA TYPE  PHOTO-INDEX

    IMAGERY-TYPE          SCENE  ID     INDEX-TYPE  QUALITY CLOUD EXPO-DATE   SCENE-SCALE     MICROFORM

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  CORNER POINT COORDINATES=#1:N39D00M00S W079D20M00S #2:N39D00M00S W076D00M00S #3:N40D40M00S W076D00M00S #4:N40D40M00S W079D20M00S

AERIAL-MAPPING-STANDARD 8590350950099   B/L PLOT     **8**    00%  07/25/61    1:60,000        0000950099
  CORNER POINT COORDINATES=#1:N39D00M00S W078D00M00S #2:N39D00M00S W076D00M00S #3:N40D00M00S W076D00M00S #4:N40D00M00S W078D00M00S

AERIAL-MAPPING-STANDARD 8590350950100   B&W-SIZE B   **8**    00%  03/17/59    1:60,000        0000000000
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AERIAL-MAPPING-STANDARD 8590800940574   B&W-SIZE B   **8**    00%  11/07/55    1:9,602,720     0000000000
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AERIAL-MAPPING-STANDARD 1VEH0305930024   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590094
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AERIAL-MAPPING-STANDARD 1VEH0005900095   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590095
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AERIAL-MAPPING-STANDARD 1VEH0005900093   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590093
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AERIAL-MAPPING-STANDARD 1VEH0005900112   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590112
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AERIAL-MAPPING-STANDARD 1VEH0005900096   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590096
  CORNER POINT COORDINATES=#1:N38D45M00S W077D15M00S #2:N38D45M00S W077D00M00S #3:N39D00M00S W077D00M00S #4:N39D00M00S W077D15M00S

AERIAL-MAPPING-STANDARD 1VEH0005900097   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590097
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AERIAL-MAPPING-STANDARD 1VEH0005900117   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590117
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AERIAL-MAPPING-STANDARD 1VEH0005900081   B&W-SIZE A   **8**    00%  04/15/77    1:80,000        0000590081
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```

You may request a computerized geographic search to locate available imagery of a specific area. There are two options for a geographic search:

- Point search—all images or photos with any portion falling over the point will be included.

- Area rectangle—any area of interest defined by four corner coordinates of latitudes and longitudes. All images or photos with any coverage of the area will be listed. The area must not exceed 200 1-degree squares (for example, latitude of 10° by longitude 20°).

A more detailed description of the computer listing is given in the Geological Survey booklet on *The EROS Data Center*.

Cloud cover information is given only in percentage, so we cannot tell you where the clouds will appear on the photos or images.

Uses

The geographic search can be a first step to locating specific aerial photos. As a result of the search, the user will receive a computer listing of available imagery and photos and a decoding sheet for interpreting the computer printout.

How to order

1. From any NCIC office or the EROS Data Center, request a booklet on *The EROS Data Center* and an *Aerial Photography Inquiry Form* or a *Space Imagery Form*, depending on the imagery you are interested in.

2. When you have gathered the information needed to complete the inquiry form, you can place your request for a search by mail, phone call, or visit to NCIC Reston.

3. Geographic areas must be precisely identified and should be limited in size to avoid receiving an unnecessarily long computer printout. It will speed the research if you can tell us the latitude and longitude of the area you are interested in. Coordinates can be found on maps in a library or atlas, or on many State road maps. An alternative identification method is to enclose a map on which you have outlined the area of interest.

4. When requesting a geographic search, be sure to mention:
(a) Acceptable filming dates and seasons.
(b) Type of imagery preferred (color, color infrared, Landsat false color, or black and white).
(c) Acceptable amount of cloud cover.
(d) Quality required.

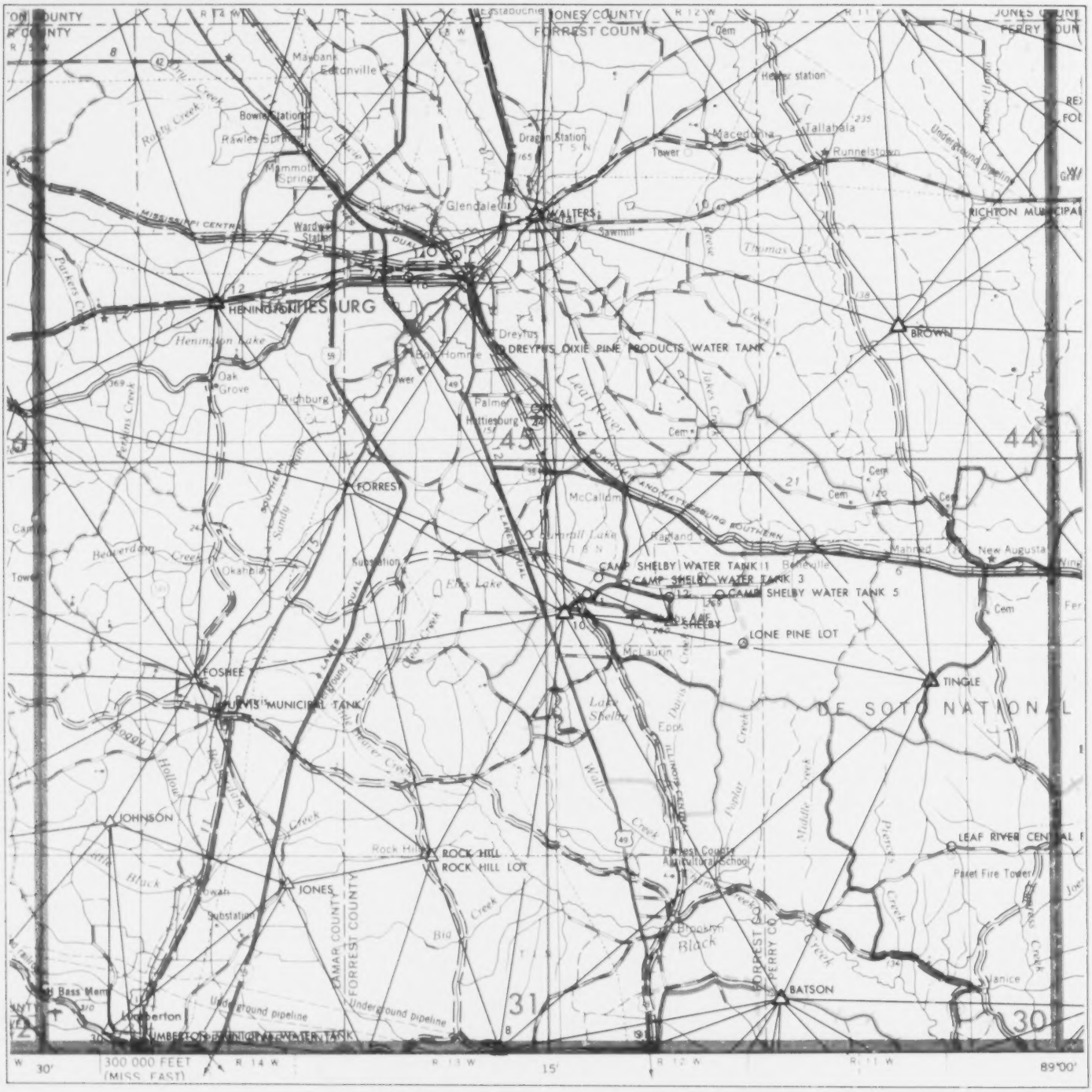
5. A description of your intended use of the imagery will also help the researchers select the best data.

Price

There is no charge for a geographic search.

Control diagrams

This typical geodetic control diagram shows a portion of Hattiesburg, Mississippi.



Since 1959 the Geological Survey and the National Ocean Survey have published a series of geodetic control diagrams.

The diagrams have a scale of 1:250,000 and span 1 degree of latitude and 2 degrees of longitude.

All the control is shown in color and plotted on the diagrams in approximately its true geographic position.

Uses

Geodetic control diagrams provide a cartographic index to the availability of geodetic data. They are used extensively by Federal, State, local, and private organizations involved in land planning, surveying and mapping, and civil engineering projects.

How to order

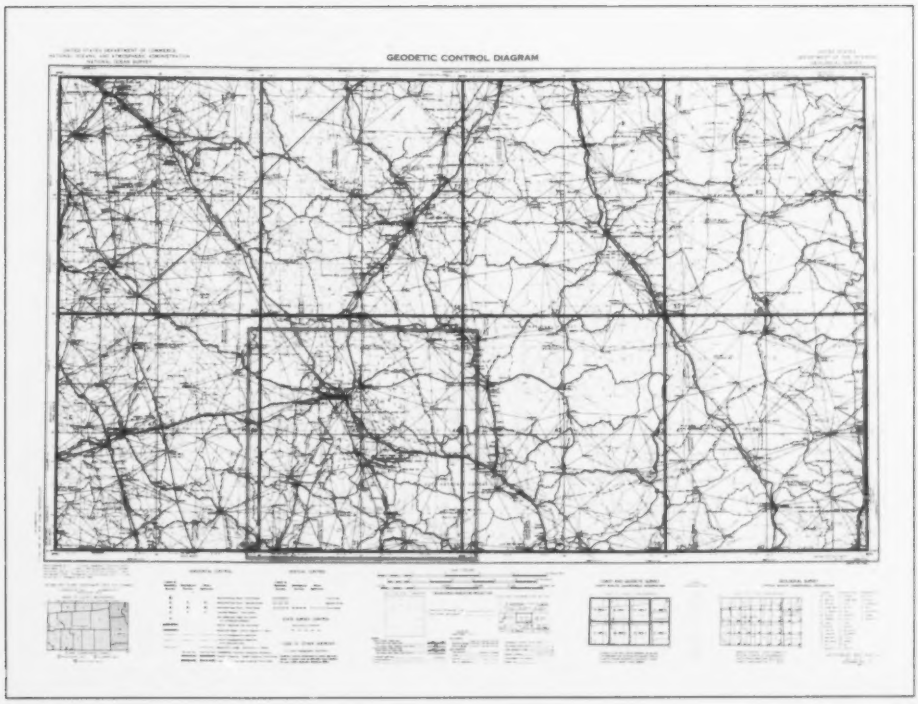
1. From any Mapping Center NCIC office, request a *Control Diagram Index*. Use the index to decide which diagrams you need.

2. Place your order with the Branch of Distribution, U.S. Geological Survey, Federal Center, Denver, CO 80225.

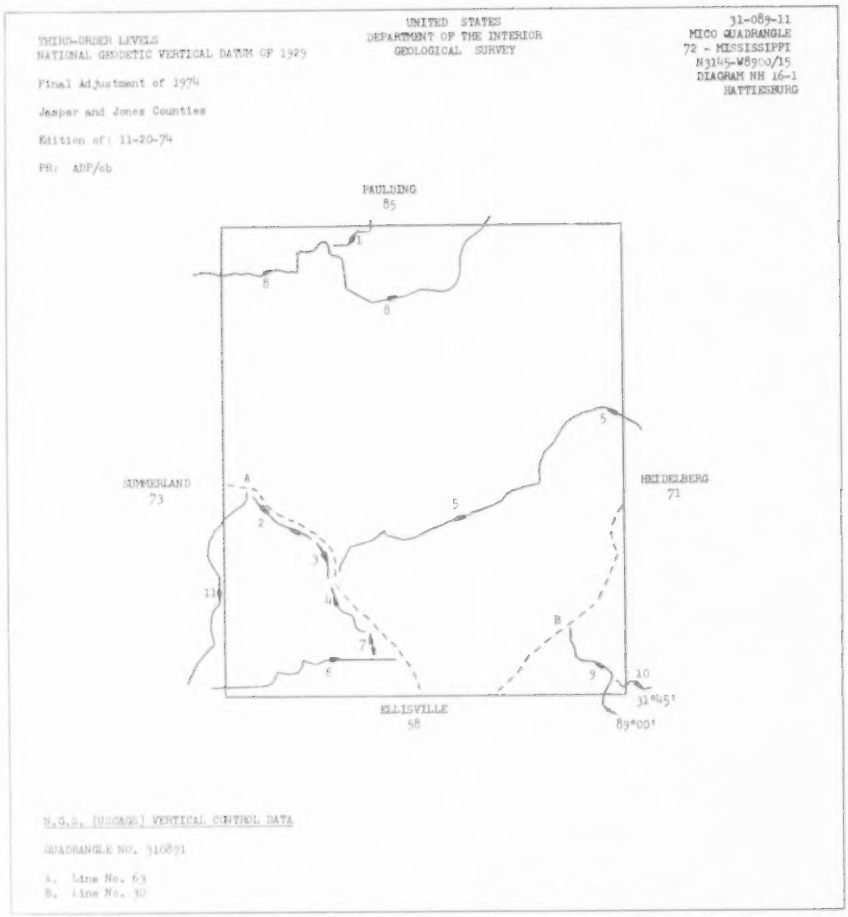
3. With your order, enclose full payment by money order or check payable to the Geological Survey.

Price

See separate price list.



Descriptive lists



THIRD-ORDER LEVELS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Final Adjustment of 1974

Jasper and Jones Counties

Edition of: 11-20-74

PH: ADP/eb

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

31-089-11
MICO QUADRANGLE
72 - MISSISSIPPI
N3145-W8900/15
DIAGRAM NH 16-1
HATTIESBURG

PAULDING
85

SUMMERLAND
73

HEIDELBERG
72

ELLISVILLE
58

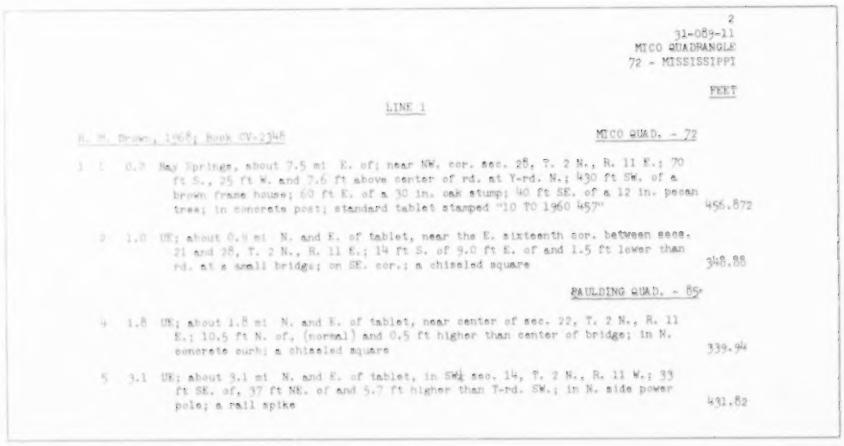
31°45'

89°00'

N.G.S. [USCAGS] VERTICAL CONTROL DATA

QUADRANGLE NO. 310891

A. Line No. 63
B. Line No. 30



2
31-089-11
MICO QUADRANGLE
72 - MISSISSIPPI

FEET

LINE 1

R. M. Brown, 1968; Book CV-2346

MICO QUAD. - 72

1 0.0 Hay Springs, about 7.5 mi E. of; near NW. cor. sec. 28, T. 2 N., R. 11 E.; 70 ft S., 25 ft W. and 7.6 ft above center of rd. at T-rd. N.; 430 ft SW. of a brown frame house; 60 ft E. of a 30 in. oak stump; 40 ft SE. of a 12 in. pecan tree; in concrete post; standard tablet stamped "10 TO 1960 457" 466.872

2 1.0 UK; about 0.9 mi N. and E. of tablet, near the E. sixteenth cor. between secs. 21 and 28, T. 2 N., R. 11 E.; 14 ft S. of 9.0 ft E. of and 1.5 ft lower than rd. at a small bridge; on SE. cor.; a chiseled square 348.88

PAULDING QUAD. - 85

4 1.8 UK; about 1.8 mi N. and E. of tablet, near center of sec. 22, T. 2 N., R. 11 E.; 10.5 ft N. of, (normal) and 0.5 ft higher than center of bridge; in N. concrete curb; a chiseled square 339.94

5 3.1 UK; about 3.1 mi N. and E. of tablet, in SW¼ sec. 14, T. 2 N., R. 11 W.; 33 ft SE. of, 37 ft NE. of and 9.7 ft higher than T-rd. SW.; in N. side power pole; a rail spike 431.82

The results of Geological Survey monumented control surveys are published and sold as tabulated lists. Each list covers a 15-minute quadrangle.

The descriptive list for each 15-minute quadrangle includes: Vertical-control lists containing the description, location, and elevation of bench marks. Horizontal-control lists containing the description and geodetic position expressed in latitude/longitude. State plane coordinates of transit-traverse, triangulation, and electronic-traverse stations.

Uses

Control points are the framework on which Geological Survey map detail is based—the framework for determining how accurately the positions and elevations of map features can be shown. Monumented geodetic control is used by engineers, planners, developers, and government agencies for various projects and for producing large-scale special-purpose maps. Existing geodetic control also serves as a base for extending additional control for special land projects.

How to order

1. Place your order for *Descriptive Lists* with any Mapping Center NCIC office.

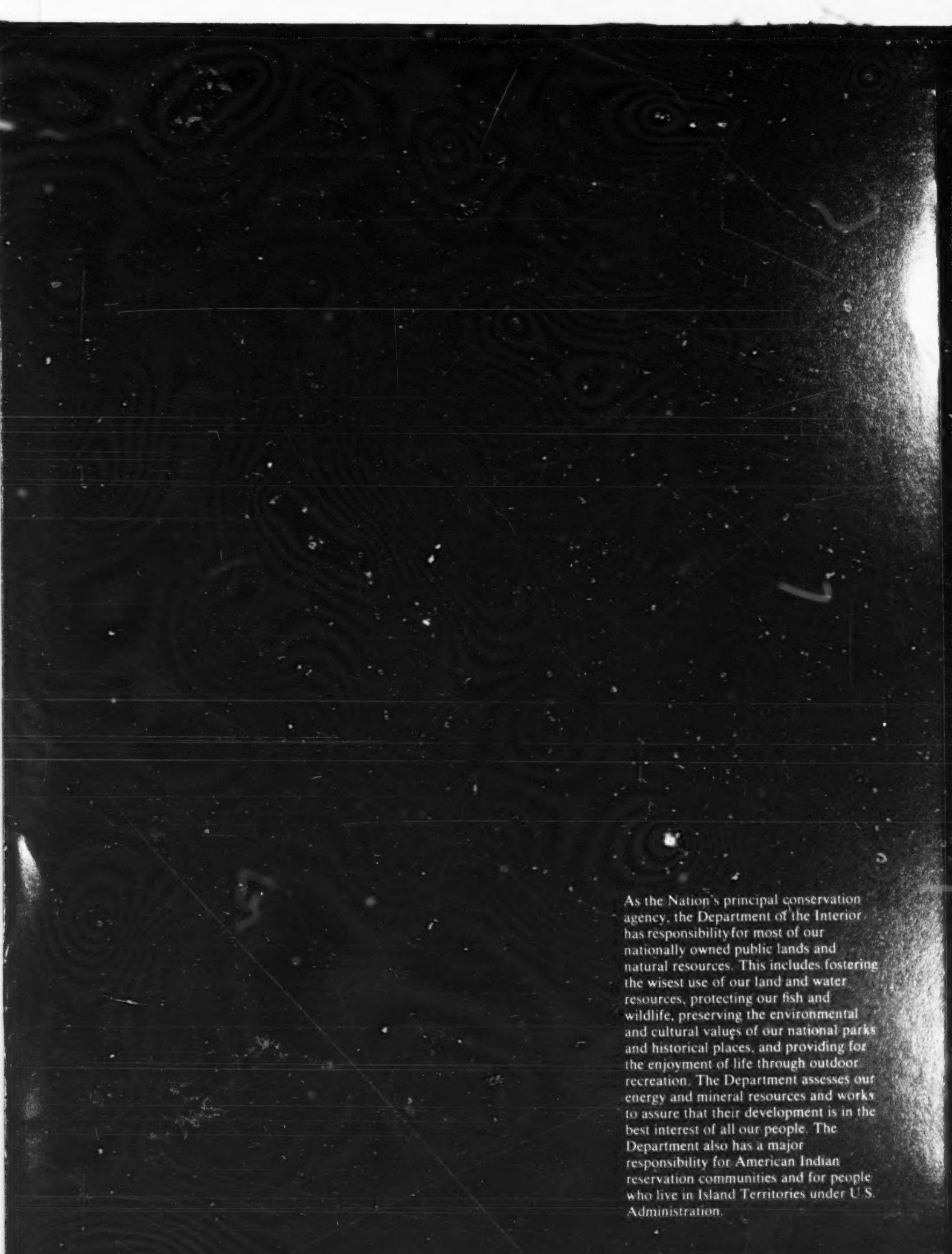
2. Provide the geographic coordinates or the name and State of the 15-minute quadrangle for the area of interest.

3. Specify whether you want a vertical or horizontal control list.

4. With your order, enclose full payment by money order or check payable to the Geological Survey.

Price

See separate price list.



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.